

VOLUME I

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**ETS - EXPOSURE STUDIES -
A REVIEW OF THE LITERATURE**

**ENVIRONMENTAL TOBACCO SMOKE
EXPOSURE STUDIES
A REVIEW OF THE LITERATURE**

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ETS: A CHARACTERIZATION

- Environmental tobacco smoke (ETS) is an aged and dilute mixture of sidestream smoke (SS), or the smoke from the burning end of the cigarette, and exhaled mainstream smoke (MS), the smoke to which the smoker is exposed.
- ETS differs chemically and physically from both MS and SS. ETS is a dynamic, ever-changing mixture which, as it ages and dissipates, undergoes chemical reactions and physical change. There is no single definable, reproducibly characterizable entity known as ETS.
- Dissipative forces such as air currents and attraction to surfaces influence SS and exhaled MS. Studies indicate that constituents in ETS are hundreds to thousands of times more dilute than either SS or MS. Often, concentrations of ETS constituents fall below detection limits of current scientific measurement devices.
- As ETS ages, a number of physico-chemical changes take place. Matter evaporates from SS particles as they age to ETS. During the aging process, ETS particles coagulate and increase in size. Chemical compounds partition between the gas and

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particle phase of the smoke. (For example, nicotine is found in the particle phase of MS; in fresh SS, most of the nicotine is in the gas phase.) Decay patterns for constituents of ETS vary over time and are dependent upon physical conditions in the environment.

• ETS is not equivalent to either MS or SS. Many studies and reviews employ sidestream/mainstream smoke comparisons, ostensibly to demonstrate the kind and quantity of constituents involved in exposure to ETS. But such comparisons are deceptive and misleading. As two tobacco smoke chemists reported in 1990:¹

Although ETS originates from sidestream and exhaled mainstream smoke, the great dilution and other changes which these smoke streams undergo as they form ETS make their properties significantly different from those of ETS. Thus, the sidestream/mainstream ratios quoted in Table 1 can be misleading if used out of context. The important question is not the ratio of sidestream/mainstream but rather what is the concentration of the constituent in the indoor environment and how does it compare to levels from sources other than ETS. Studies based solely on observations of fresh sidestream, or highly and unrealistically concentrated ETS, should take into account the possible differences between these smokes and ETS found in real-life situations.

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Even the 1986 Report of the Surgeon General on ETS and the 1986 NRC/NAS Report on ETS conceded:

Comparison of the relative concentrations of various components of SS and MS smoke provides limited insights concerning the toxicological potential of ETS in comparison with active smoking. As described above, SS characteristics, as measured in a chamber, do not represent those of ETS, as inhaled by the non-smoker under nonexperimental conditions.²

Similarly, the NAS Report concluded:

Because the physicochemical nature of ETS, MS, and SS differ, the extrapolation of health effects from studies of MS or of active smokers to nonsmokers exposed to ETS may not be appropriate . . .³

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See also:

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EXPOSURE TO ETS

- Published studies indicate that nonsmoker exposure to ETS under normal, everyday conditions is minimal. For example, researchers report that there is little difference in ambient levels of carbon monoxide in smoking and nonsmoking areas of workplaces and public places and in homes with and without smokers.¹⁻⁶ Other studies indicate that ETS contributes less than half of the total particles in the air of a typical public place.*⁷⁻¹⁴ Nicotine is often used as a marker for ETS

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- * A paper published in a 1980 issue of Science magazine, in which the authors reported the results of their efforts to measure particles or particulates in the air of smoking and nonsmoking areas, is often cited to support the claim that ETS is a major indoor pollutant. The authors, Repace and Lowrey, contend that the levels of particles they observed in the smoking areas were much higher than in the nonsmoking areas. However, their study results are inconsistent with many others. For example, the average particle count attributed to ETS in their study was from three to twenty times higher than the average levels reported in other studies of office buildings, restaurants and residences.

There are a number of explanations for the authors' apparent overestimation of ETS exposure. First, they selectively sampled environments such as meeting and game rooms, bars and sandwich shops which did not represent normal occupancy conditions and where particulate levels would likely be high regardless of the presence or absence of tobacco smoke. Second, through inappropriate testing methods, they incorrectly assumed all particles in the air arose from ETS. However, as several researchers have noted, ETS typically contributes about one-third of the overall particle levels in indoor spaces. Moreover, particles also are generated by people and their everyday routine activities such as movement and cooking. (Repace, J. and A. Lowrey, "Indoor Air Pollution, Tobacco Smoke and Public Health," Science 208: 464-472, 1980.)

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exposures because it is unique to tobacco smoke. Typical measurements of nicotine range from an exposure equivalent of 1/100 to 1/1000 of one filter cigarette per hour.¹⁵⁻²² This means that a nonsmoker would have to spend from 100 to 1000 hours in an office, restaurant or public place in order to be exposed to the nicotine equivalent of a single cigarette.

- Studies which have examined ETS constituent levels of nitrosamines, nitrogen oxides and volatile organic compounds (such as benzene**) report minimal contributions to overall ambient air levels in homes, the workplace and public places.²³⁻³⁶

** Benzene exposure from ETS is negligible, despite reports to the contrary.³⁷⁻³⁸ "Automotive fuel is, by far, the largest, most pervasive source of benzene exposure. In 1989, the U.S. Department of Health and Human Services estimated that 1 billion pounds of benzene were released into the atmosphere from the refueling and operation of approximately 130 million motor vehicles in 1976 [NIEHS, 1989]. This translates into 7.8 pounds of benzene per vehicle per year. In contrast, a pack-per-day smoker would generate approximately 0.008 pounds of benzene per year, assuming that, at most, 0.5 mg of benzene is generated from one cigarette (MS plus SS) [Hoffmann, 1990]. Based on these estimates, an average person is potentially exposed to 1,000 times more ambient benzene from one automobile than from a smoker in a given year." [From: Response of RJR, The U.S. EPA: "ETS: A Guide to Workplace Smoking Policies," October 1, 1990.]

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Questionnaire Reliability:

- All of the epidemiologic studies on the purported association between ETS exposure and disease in nonsmokers rely solely upon questionnaires about exposure, rather than upon actual exposure data.³⁹⁻⁴¹ Recent studies indicate that questionnaires are an unreliable and inaccurate measure of exposure. Questionnaire responses about exposure vary widely when compared with actual measurements of ETS constituents in the ambient air.⁴¹

ETS and Radon:

- A theory that suggests that concentrations of radon decay products increase in the presence of tobacco smoke, thus implying an increased risk of lung cancer for the nonsmoker, has been reported in the literature.⁴²⁻⁴⁴ The theory suggests that radon decay products attach to particles (including ETS) in the air, remain suspended, and are subsequently taken up in the lungs of nonsmokers.
- However, actual data indicate that this is not the case.⁴⁵⁻⁴⁸ It is the unattached, gaseous fraction of radon which determines the dose of radiation to the respiratory tract. According to these data, as dust or particulate levels

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increase, the unattached fraction of radon daughters will decrease, thereby lowering the potential dose of radiation to the lungs.

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DETERMINATION OF DOSE: COTININE

- It has been reported that cotinine, a substance converted from nicotine by the body, can be used as a biological marker to measure nonsmoker exposure to ETS.¹⁻² While some reports suggest that cotinine is a reliable marker for total exposure to tobacco smoke, many others do not.³⁻¹² Researchers have reported that individuals metabolize nicotine in different ways at different times and that elimination rates for cotinine vary among individuals. In addition, recent research indicates that diet may contribute to levels of nicotine and cotinine found in the body, thereby interfering with ambient air exposure levels.¹³ Scientists have also noted that different methods of analysis may influence final recorded levels of cotinine.¹⁴ And finally, because cotinine is a metabolite of a gas-phase constituent of ETS, nicotine, cotinine levels do not represent exposures to other constituents of ETS.
- In conclusion, cotinine is not a reliable quantitative measure of ETS exposure. This is because body fluid levels of cotinine cannot be attributed solely to nicotine in ETS, and because body fluid levels of cotinine do not correlate well with actual ambient air exposures to ETS or with ETS constituents other than nicotine. At best, cotinine may be used as a qualitative marker of ambient nicotine exposures.

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DETERMINATION OF DOSE: LUNG RETENTION

Cotinine is a biologically inactive substance which has not been correlated with ETS constituents retained in the lung. Several researchers have estimated levels of ETS particulate uptake by nonsmokers to approximate 0.02% (two-hundredth of one percent) that of the particulate exposure of an active smoker.¹⁻⁴

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DETERMINATION OF DOSE: MUTAGENS

- Some reports have suggested that the potential toxicity of ETS can be assessed by measuring mutagens in the body fluids of nonsmokers exposed to ETS.¹⁻³ Mutagens are substances capable of altering the genetic structure of cells. It is suggested that the presence of mutagens in body fluids (e.g. urine) may be an indication that an individual has been exposed to substances capable of inducing cancer.
- Impetus for the theory arises, in part, from studies which report that various constituents of ETS collected through airborne samples are capable of inducing mutations in bacteria.⁴⁻⁶
- However, the significance of such reported findings has not been established. Virtually all air samples, whether in the presence or absence of smoking, are mutagenic. Indeed, no substance, including food and natural materials, has been unequivocally shown to be free of carcinogenic and/or mutagenic properties. In addition, it has been reported that sidestream smoke exhibits diminished mutagenic activity as it ages and becomes diluted (i.e., as it becomes ETS).⁷

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- With few exceptions, studies which have compared mutagens in the body fluids of nonsmokers exposed to realistic levels of ETS and nonsmokers not exposed to ETS report no significant difference in mutagenic activity.⁸⁻¹¹
- The few studies reporting significant increases in urinary mutagenicity among individuals exposed to ETS¹⁻³ did not employ realistic levels of exposure to ETS, and they did not control adequately for the presence of mutagens in the diet of the study subjects.

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DOSE: OTHER BIOLOGICAL MARKERS

- It has been suggested that sidestream smoke (and by inference, ETS) contains polycyclic aromatic hydrocarbons (PAH), substances which have been designated as carcinogens by various governmental agencies. However, in a series of papers, German researchers report no significant differences in urinary PAH by-products among nonsmokers exposed to ETS and those not exposed.¹⁻³ Diet was reported to have a profound influence on PAH by-product formation in all study subjects.
- Japanese scientists have reported that individuals exposed to ETS have increased urinary levels of hydroxyproline (HOP), a substance believed to act as a marker for the breakdown of lung tissue.⁴ However, German researchers have reported no increase in HOP excretion among either smokers or nonsmokers exposed to ETS.⁵
- It has recently been suggested that DNA adducts can be utilized as biomarkers to assess exposure (dose) to ETS.⁶ (An adduct is a product derived from reactions between chemicals and biological material (such as DNA)). Research, however, does not conclusively support this theory; nonsmokers exposed to ETS do not appear to exhibit increased DNA adduct production.⁷ Other studies report no increased chromosomal changes in body

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fluids of nonsmokers exposed to ETS.⁸⁻⁹

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BIOLOGICAL PLAUSIBILITY

- The argument for the biological plausibility of the role of ETS in disease causation depends upon the simplistic claim that since mainstream (MS) and sidestream (SS) smoke contain carcinogenic substances, so must ETS. However, this analogy is not proved.
- ETS has never been shown to be carcinogenic in any animal species. Only two animal inhalation experiments investigating ETS and lung cancer have been published. Both studies report no meaningful histopathological differences between animals exposed to ETS and those which were not exposed. In a study conducted by the American Health Foundation,¹⁻³ the investigators exposed one group of hamsters to mainstream smoke and another group to ETS. Animals exposed to mainstream smoke and ETS lived longer than the sham treated controls. The investigators reported that overall there was no marked increase in tumor incidence in animals exposed to either mainstream smoke or ETS after 18 months of exposure. The second study was a 90-day ETS inhalation study of rats and hamsters.⁴ Animals were exposed to ETS concentrations 100 times those concentrations encountered by nonsmokers. These researchers reported no histopathological differences between exposed and control animals. Electron microscopy revealed

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pulmonary changes which could be expected to occur under similar exposure conditions with other substances.

- In addition, recent reviews of the literature on suspected pulmonary carcinogens have indicated that none of the individual constituents in sidestream smoke classified as potentially carcinogenic has been found to induce pulmonary cancer via inhalation in experimental animals.⁵⁻⁶
- ETS has not been shown to be mutagenic in any animal or cell culture system when tested at realistic levels of exposure (See Section III).
- These points undermine the credibility of the argument for the biological plausibility of ETS in disease causation.

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APPENDIX I

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ASSESSING EXPOSURE TO ENVIRONMENTAL TOBACCO SMOKE: IS IT VALID TO EXTRAPOLATE FROM ACTIVE SMOKING?

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Abstract

This review examines the question of whether exposure to environmental tobacco smoke (ETS) can be assessed by extrapolation from active smoking. General problems associated with assessing exposure to ETS and the pathophysiological consequences are discussed. Among the topics presented are the dynamic chemical and physical characteristics of ETS and exposure assessment using airborne and biological markers. The reported pathophysiological consequences of ETS exposure are examined in the context of dose and exposure. The conclusion is that it is extremely difficult, if not impossible, to extrapolate from active smoking to ETS exposure with any degree of reliability.

Key words: Environmental tobacco smoke, nicotine, cotinine, adducts, cancer, risk assessment, pathophysiology

Introduction

Tobacco smoke is an exceedingly complex matrix, consisting of several thousand constituents. As it is dispersed in the atmosphere, its chemical and physical complexity can be increased through reactions among its constituents and through evaporation, condensation, coagulation and adsorption or impaction on surfaces [1]. Tobacco smoke as it exists in the ambient environment is termed environmental tobacco smoke (ETS) and is clearly a complex and dynamic material whose properties are influenced by numerous factors. With recent concern that exposure to ETS may present a health hazard to the non-smoker [2,3], a number of risk assessments have been published

dealing principally with the possible relationship of ETS to mortality and lung cancer [4]. Among several approaches used for ETS risk assessment has been the comparison between exposure to ETS and active smoking [5-8]. Inherent in such an approach is the assumption that ETS is a dilute form of mainstream smoke (MS) inhaled during active smoking, and that other than the differences in concentration, exposure conditions are similar. Considerable information exists concerning the properties of MS and the conditions of exposure during active smoking [9,10], in large part because material can be collected under reproducible conditions that simulate those to which the smoker is exposed. In contrast, the

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dynamic nature of ETS precludes its characterisation and assessment of exposure to a degree of accuracy possible with mainstream smoke.

Certain criteria must be considered in conducting a risk assessment of a material [11]. Three of these involve consideration of composition and exposure:

1. *A hazard identification*, in which it is determined whether a particular substance is causally linked to specific health effects.
2. *An exposure assessment*, in which the extent humans are exposed to the material has been determined.
3. *A dose-response assessment*, in which the amount of exposure to the material and the probability of occurrence of the specific health effects have been determined. It is the purpose of this article to examine the question of whether exposure to ETS can be assessed by extrapolation from active smoking.

Characterisation of ETS

The following discussion will be concerned with cigarettes only. Mainstream smoke (MS) is that smoke drawn into the mouth through the butt end of the cigarette by the active smoker. Side-stream smoke (SS) is defined as all other smoke emitted from the cigarette with the vast majority being the smoke released from the burning end of the cigarette between puffs [12]. In addition to MS, the active smoker is exposed to SS at levels higher than the non-smoker because of the proximity to its generation. ETS is composed of both SS and exhaled mainstream smoke (EMS), the material exhaled by the active smoker. While it is generally accepted that SS makes a larger contribution to ETS than does EMS, the relative contributions of each material to ETS have not been systematically examined. There is some evidence that EMS contributes little to the gas phase of ETS, however, it does contribute significantly to the particulate phase of ETS [12]. With certain tobaccos,

EMS may contribute over 40% of the particles of ETS.

The properties of ETS are influenced significantly by a number of considerations including type of tobacco smoked and smoke density, as well as environmental factors such as dilution, ventilation, temperature, humidity, lighting and adsorption onto surfaces. Additionally, chemical reactions occur changing the composition of ETS, e.g. with time after generation, nitric oxide is converted to nitrogen dioxide [12]. The changes that occur as ETS lingers indoors are termed aging, and contribute significantly to the complexity and dynamic nature of ETS. Because of these factors, it is impossible to provide a definitive chemical and physical description of ETS, its characteristics depending on conditions that exist at any given time. As a result, little consistent information exists on the characteristics of ETS under ambient conditions in indoor environments that would allow generalisations about its composition to be made. Because the frequency of puffing and the depth of inhalation differ among smokers, it should be apparent that the relative contributions of SS and EMS to ETS will be different for each ambient environment. Therefore, in addition to environmental factors described previously, the chemical and physical properties of ETS are dependent upon the smoking patterns that occur in an indoor environment. The origins and properties of ETS have been reviewed in detail elsewhere [12].

These considerations notwithstanding, numerous studies have been conducted in an attempt to characterise ETS. These have included the analysis of freshly generated SS, SS allowed to age in controlled environmental chambers, SS allowed to age in well-controlled experimental indoor environments, and ETS in a number of typical indoor environments. Each of these situations has specific limitations as to its usefulness in characterising ETS.

Considerable effort has been directed at characterising freshly generated SS as

a surrogate for ETS, and much data exist on the chemical composition of this material [13-19]. Serious problems are inherent in utilising this approach. First, and most importantly, ETS is much more complex and variable than SS generated in the laboratory due to the presence of undefined proportions of both SS and EMS and the influence of aging on ETS components. Secondly, SS is produced under conditions that do not necessarily represent the smoking pattern of individuals. SS is generated under standardised smoking conditions adopted over 20 years ago in apparatuses that allows it to be rapidly collected for analysis. The conditions are almost always one puff/min of 2 sec duration and a volume of 35ml. Since people smoke with different patterns these conditions do not necessarily simulate those of most smokers [20], and as a result, the quantities of materials released into ambient air will likely vary from those generated using smoking machines. The same objections about standardised smoking conditions could be raised regarding the composition of MS, as well.

The environmental conditions present during generation will influence the levels of chemicals in SS. This is illustrated by the effect of the velocity of air passed over the tip of the burning cigarette when generating SS [21]. In this study, the level of dimethylnitrosamine in SS varied as a function of air flow. Flow rates of 250, 500, 1000, and 1500ml of air/min yielded levels of dimethylnitrosamine of 90, 250, 530, and 680ng/cigarette, respectively. Therefore, depending on the conditions used for generation and collection, values for SS may vary greatly. This is illustrated by the wide range of values reported in the literature for nearly one hundred chemicals reported to be present in SS [15].

Compared to the study of freshly generated SS, utilisation of environmental chambers offers the opportunity to examine the properties under controlled, although not necessarily realistic conditions. The most extensive examination

of SS-derived ETS under these conditions appears to have been performed by Eatough and colleagues [14,15,22]. They have utilised an unventilated teflon chamber in studying the properties of ETS originating from SS generated within the chamber. Use of the teflon chamber permits ETS to be studied in a setting where results are not influenced by ventilation or surface properties. Under these conditions, a comprehensive analysis of the chemical composition of the gas and particle phases of ETS was performed, and the behaviour of the particulate phase examined. For example, it was observed that nitrogen dioxide was the major inorganic acid present in the gas phase of ETS, and nicotine, 3-ethenylpyridine, and pyridine were the principal nitrogen bases present. Major particulate phase organic compounds were nicotine, myosmine, solanesol, nicotyrine and cotinine. Greater than 95% of the nicotine was present in the gas phase. As the ETS aged, particles underwent at least three changes. Particles deposited on the wall of the chamber, they coagulated increasing in size, and evaporation from the particles was also significant. The effect of UV radiation was also examined, and it was noted that the level of gas phase nicotine decreased with a concomitant, but less than stoichiometric increase in particulate phase nicotine. An important class of compounds, the nitrosamines were not examined in this system. It will be of considerable interest when the levels and behaviour of the volatile and tobacco-specific nitrosamines are examined under such controlled conditions.

Using a stirred stainless steel chamber to study the properties of ETS, it was reported that smoke particles underwent evaporation over the first few hours [23]. As the ETS aged, particle size increased due to a combination of coagulation and removal of smaller particles by deposition on the surface of the chamber. Similar observations have been made using a ventilated steel chamber [24].

The decay of a number of SS-derived components has also been studied in a

non-ventilated glass and stainless steel chamber [25]. In particular, polycyclic aromatic hydrocarbons (PAHs) decay at different rates during aging depending on their molecular weights; PAHs below 156 daltons had a longer half-life than those above this value. As with other experimental systems, nicotine decayed more rapidly than particulate material.

Studies have been reported using a modified trailer in which conditions can be controlled with respect to ventilation, temperature, humidity, and circulation [15,22]. Such an environment can be made to simulate closely ambient indoor conditions. Some important observations were made concerning the behaviour of SS-derived ETS in this setting which were similar to those of other workers [12]. For example, the absolute decay of various constituents of ETS was primarily controlled by the rate of ventilation. The rate of decay of nicotine was the most rapid of the components studied, while the NO_x-NO species were the most stable.

While controlled chamber studies have provided useful information about ETS, the results must be interpreted with a degree of caution. These conditions only partially simulate the ambient environment in which non-smokers are exposed to ETS. For example, no studies have examined the behaviour of ETS when persons are present in the chamber or when ETS has been generated by smokers so that EMS is also present. In an effort to obtain realistic data on ETS exposure, numerous studies have examined selected chemicals and particles in ETS under a variety of ambient conditions [26-32].

Problems exist in the interpretation of these data, as well. In general, only a few substances have been investigated in each study, with sampling performed over single periods of relatively short time (24 h or less). Such a sampling protocol will fail to describe the daily variations in ETS levels that exist in indoor environments as well as fail to provide a measure of chronic exposure. The lack of specificity of most of the measured substances for ETS (e.g. carbon monoxide and respirable

suspended particles) limits conclusions that can be drawn about the composition of ETS in these studies.

Exposure assessment methods and interpretations

It should be clear that there is no defined, reproducibly characterised entity known as ETS, rather it is a constantly changing substance influenced by numerous environmental and personal factors. At present, the published research represents little more than a broad representation of the nature of ETS. Therefore, it is currently not possible to compare the risks, if any, of exposure to ETS with those reportedly associated with active smoking based on the chemical compositions of each of these materials.

As an alternative solution to the problem of characterising ETS, several approaches have been utilised to assess ETS exposure with the goal of predicting possible related health effects. These efforts have involved the assessment of exposure by use of questionnaires, modelling, surrogate airborne markers, and the assessment of internal dose by use of biological markers (biomarkers).

Reliance on questionnaires alone to assess exposure is fraught with numerous problems including lack of standardisation and validation, responder bias and potential misclassification of subjects. At best their use represents an indirect measure of exposure and cannot provide any quantitative information on specific or total exposure levels or doses of biologically relevant chemicals at target sites [33-36]. Questionnaires can have value when used as part of a more comprehensive exposure assessment. For example, an index of exposure has been developed, which includes questionnaires as one component, along with a daily diary, that correlates well with nicotine collected by a personal monitor [37].

Modelling has been used to assess concentrations of ETS constituents and to estimate exposures [5,6,38]. Data from other studies are normally used in the modelling and, additionally, this approach

requires assumptions which generalise and often oversimplify the exposure conditions.

The use of airborne markers and biomarkers offer the best opportunity to assess exposure to ETS. Unfortunately, reliance on either of these assessments alone for such a complex and dynamic mixture as ETS may result in misleading information. For example, the external dose may not be related to the internal dose as absorption, distribution metabolism and elimination may differ among individual components (particles, water-soluble chemicals, organic materials). The presence of a biomarker in a non-target tissue does not necessarily correlate with the level of a potentially toxic species at the critical cellular site nor whether a disease will result. These limitations in the use of airborne and biological markers are present when applied to exposure assessment for ETS.

Assessment of external exposure

Due to the complex chemical and physical nature of ETS, investigators have relied on tracers, or surrogates, in measuring external exposure to ETS. The National Research Council [2] has provided criteria which should be satisfied in using a surrogate for ETS.

1. It should be unique or nearly unique to ETS.
2. It should be present in sufficient quantity that concentrations can be easily detected in air, even at low smoking rates.
3. It should be characterised by similar emission rates for a variety of tobacco products.
4. It should be in a fairly constant ratio to the components of interest under a range of environmental conditions encountered and for a variety of tobacco products.

Unless the first criterion is fulfilled, the remaining criteria are of less significance.

To date, no single material has satisfied these criteria.

Respirable suspended particles (RSP) and nicotine have been used most frequently as surrogates for ETS. The use of RSP fails to satisfy the first criterion because of its lack of specificity to ETS. There is a significant level of background RSP not related to ETS in the indoor environment. This has been demonstrated using the property of ultraviolet absorption of RSP as representative of the ETS-specific portion of RSP [29,30]. In several environments where smoking was permitted, it was found that ETS contributed less than 40% of the particles in the indoor environment. If RSP in an indoor environment is to be attributed to ETS, it is necessary to rule out all other sources of RSP. This has not been done satisfactorily in the studies reported to date.

While the measurement of RSP may serve as an index of exposure, it is not a measure of the dose or the amount of particulate material that will be retained in the lungs of those exposed. It is the amount of material retained in the lungs that is believed to have a relationship to health effects, not the amount to which a person is exposed. In fact, the relative retention of ETS particles has never been measured.

Different deposition patterns are to be expected for the particles in ETS and those in MS because of the different breathing patterns of the two population groups. An active smoker inhales MS by mouth often with a deep inhalation followed by a prolonged respiratory pause. Such a manoeuvre increases residence time of particles and gases in the entire respiratory tract, optimising conditions for deposition. In contrast, a non-smoker would inhale ETS principally through the nose using a regular breathing pattern which is much more shallow than that used by active smokers. The shallow breathing pattern would reduce the degree of pulmonary deposition of particulate materials of ETS in non-smokers compared to MS in the active smoker.

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Risk assessments for lung cancer have been performed using estimated exposure to RSP from ETS [6,39]. The values used in these calculations were dependent on a number of assumptions that did not consider the limitations of using RSP as a surrogate for ETS. Consequently, the risk values are open to question.

Nicotine has been measured in ambient air using area sampling [40-42] and with personal samplers [37,43,44]. Personal samplers monitor the immediate environment of the subject permitting a more accurate assessment of personal exposure than occurs with area sampling. While airborne nicotine would be specific for ETS, problems exist in using it as a surrogate. Nicotine in ETS is principally in the gas phase [15], while nicotine in MS is almost exclusively in the particulate phase. Therefore, in ETS, nicotine would be serving as a surrogate for gas-phase components only.

Additionally, nicotine in ETS decays more rapidly than other gas-phase components [22], in large part due to its adsorption onto surfaces. It is likely that, once smoking has stopped in a room, the adsorbed nicotine will be slowly released back into the atmosphere. If this occurs, a low level of airborne nicotine may be present in an area where smoking had not occurred for some time giving an inaccurate representation of total ETS exposure.

The ratio of RSP/nicotine has been discussed as a possible monitor for ETS in ambient environments, and in particular as a means for quantifying the ETS-specific RSP [45]. Laboratory studies have given an average ratio of 13.4. Using values for RSP and nicotine from field surveys, it has been concluded that the relationship between these two materials is too variable to use for predictive purposes [46].

The mutagenic properties of RSP have been used to assess exposure to ETS [26]. The principal problem with this approach is the interpretation of the results. The significance of the presence of airborne

mutagens has not been established nor have quantitative measures of retention of mutagenic materials been obtained. Because of these uncertainties, the measurement of airborne mutagenicity has provided little information in assessing exposure to ETS.

To date no single material satisfies the criteria as a marker for ETS. Consequently, it has not been possible quantitatively to assess the external dose of ETS a non-smoker receives.

Assessment of internal dose

As an assessment of exposure to ETS, biomarkers can serve as surrogates for the internal dose received. Criteria have been proposed that an effective marker should satisfy [47]:

1. It should be tobacco-specific in order to be certain of its origin.
2. It should have a long half-life so that it serves as an index of exposure over an extended period of time.
3. The marker should give a valid indication of the health risks of exposure.
4. Analytical techniques should be available that can reliably and conveniently measure the low levels of the marker present in non-smokers exposed to ETS.

Biomarkers of ETS exposure have been measured in biological fluids of humans. Several biomarkers have been utilised with varying degrees of success in the assessment of exposure to ETS, including nicotine and cotinine in saliva, blood, and urine, DNA and protein adducts in blood, and mutagenic activity in urine. From these results, investigators have drawn conclusions about exposure, risk of disease, and mortality.

When interpreting studies in which biomarkers have been used to assess exposure or risk, a number of factors must be considered [48]. Data on variation among individuals in absorption, metabolism (including bioactivation and detoxication), kinetics, distribution, excretion, binding to macromolecules and cellular repair must be evaluated. In the

use of biomarkers for assessment of exposure to ETS and assessment of potential health risks, such considerations have not been employed consistently.

Biomarkers such as nicotine, or one of its metabolites, cotinine, in body fluids have been used to assess internal exposure to ETS [41,48-50]. In general, salivary and urinary cotinine provide the best relationship with self-reported exposure to ETS [47,51]. Levels of cotinine in body fluids tend to correlate directly with the number of smokers in the household, the number of hours of exposure, the number of smokers among acquaintances, and are higher in non-smokers married to smokers than in those married to non-smokers.

Nevertheless, significant limitations exist in the use of nicotine or cotinine to assess exposure to ETS. At best, levels of nicotine or cotinine are useful qualitatively to assess exposure. Too many limitations exist for them to be considered quantitative dosimeters from which risk can be estimated [52]. In virtually all studies reported, single samples are taken in the assessment of exposure. Such values are an index of exposure at a specific point in time and do not represent the cumulative exposure that would be required properly to evaluate exposure to ETS. Importantly, the vast majority of nicotine in ETS is in the gas phase while nicotine in MS is predominantly in the particulate phase [22,53]. Therefore, values for nicotine or cotinine in body fluids represent the inhalation of physically different materials in the two exposure groups making their comparative use questionable. Additionally, gas-phase nicotine and particulate-phase nicotine decay at different rates under experimental conditions [22]. Levels of nicotine or cotinine in body fluids provide no information on exposure to other chemicals, particularly those in the particulate phase which are believed to have the most relevance to potential adverse health effects.

It was once thought that one of the attractive features of using nicotine and cotinine as biomarkers was their tobacco

specificity. Recent studies indicate that nicotine is not unique to tobacco. A number of vegetables in our diet have been shown to contain nicotine [54,55]. The fact that nicotine, and consequently cotinine, can arise from non-tobacco sources complicates the interpretation of the low-level values of these chemicals that are measured in the body fluids of non-smokers.

Cotinine is only one of a number of metabolites of nicotine and evidence is now indicating that nicotine-n-oxides or trans 3'-OH-cotinine, rather than cotinine, may be the most abundant metabolites of nicotine in the urine [56-58]. Cholerton et al., [56] report a larger coefficient of variation for cotinine than other nicotine-derived metabolites in the urine of smokers. Variations in the metabolic formation of cotinine among non-smokers would further confound the interpretation of cotinine levels.

Complicating this problem even further are pharmacokinetic factors. Nicotine appears to be metabolised at different rates in smokers and non-smokers [59-61]. The half-life of nicotine in plasma appears to be shorter for smokers than for non-smokers, therefore, the relative relationship of values between the two groups will differ depending upon the time of sampling.

Both intralaboratory and interlaboratory variations have been reported for urinary cotinine values [62,63], indicating that comparisons of values among laboratories should be made with caution. Such methodological considerations are of particular significance when values are low as is the case with exposure to ETS.

It seems evident that the measurement of cotinine in body fluids will likely provide misleading information regarding the quantitative exposure to ETS. Considering the factors discussed, a compelling argument can be made against using nicotine or cotinine values for either a quantitative comparison of exposure between smokers and those exposed to ETS or in an

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attempt to assess the possible risk of exposure to ETS.

Urinary cotinine as a predictor of health risks of exposure to ETS should be used with caution [64]. Nevertheless, a risk assessment estimating ETS-related mortality has been made using such values. One study reported that urinary nicotine values in non-smokers were 0.7% of the level found in smokers [8] and the assumption made that there are premature deaths from the inhalation of ETS which may be approximately 0.7% of that due to active smoking resulting in 1,000 deaths a year in Great Britain and 4,000 deaths a year in the United States. No consideration was given to the limitations in the use of this marker. Additionally, the authors assumed that the relationship of dose-to-risk is linear between these two exposure extremes, an assumption that has not been shown to be valid. Clearly, this risk assessment is overly simplistic and confounded by a number of significant conceptual problems.

Wigle et al. [65], used values for urinary cotinine of active smokers and non-smokers exposed to ETS to assess the relative exposures of non-smokers to components of tobacco smoke that have been reported to be toxic. They concluded that persons exposed to ETS for 20 or more hours per week have exposures to six compounds that have been designated as known or probable human carcinogens which are at least 2% of those of active smokers and, for certain of these compounds, may be more than 20%. In arriving at these estimates, the authors made a number of assumptions which ignore the complexity of the exposure situation. In particular, SS was used as a surrogate for ETS. Such a premise is clearly inappropriate and invalidates any quantitative relationships that might be developed.

DNA and protein adducts have been utilised as biomarkers to assess internal exposure to ETS. Adducts are products derived from covalent reactions between chemicals and biological material such as

DNA and proteins. The formation of DNA adducts is reported to be associated with mutagenesis and carcinogenesis [66,67], and adducts are viewed as markers of the biologically effective dose of carcinogens in humans. Recent evaluation of the role of adducts in carcinogenesis indicates that the relationship may not be as direct as initially thought [68].

In spite of the lack of correlation between adduct levels and cancer in a number of studies [69-72] considerable interest continues in their use as molecular dosimeters for carcinogenesis. Although studies have started to examine their possible role in the assessment of exposure to ETS, little useful information currently exists in this context.

For many chemicals, adduct formation following metabolic activation is a necessary, but not sufficient, event to initiate carcinogenesis [73,74]. The formation of adducts may not occur on a region of the genome that is critical in the carcinogenic process. The role of DNA repair must also be considered [75,76]. The variability in repair capabilities in humans [77] will influence the level of adducts present in a tissue. Additionally, genetic polymorphism of drug metabolism in humans has been shown to result in wide inter-individual capacities to activate carcinogens metabolically [78]. Because cancer is a multistage process, and because the level of adducts may be influenced by a multitude of factors including diet [79] it is thought to be unlikely that DNA adducts will provide precise quantitative dosimetry for predicting cancer risk [80], particularly where the level of adducts is as low as observed for ETS exposure. Another line of research in this area involves proteins as target molecules for adduct formation with the goal of serving as a surrogate for DNA adducts [81]. Because of its abundance, haemoglobin has been used to monitor adduct levels associated with exposure to tobacco smoke [82,83].

A potentially attractive aspect of the use of adducts as a dosimeter for ETS exposure, is that they may be useful in

monitoring exposure, at least qualitatively, on a more chronic basis than with other markers. To date, no tobacco-specific adduct has been identified that is capable of fulfilling this goal. Adducts of 4-amino-biphenyl-haemoglobin (4-ABP-Hb) and of benzo[a]pyrene diol epoxide-1-DNA (BPDE-1-DNA) in white blood cells have been compared in smokers and non-smokers [82-84]. While both 4-ABP and benzo[a]pyrene (BP) have been classified as carcinogenic, neither is tobacco-specific. Levels of 4-ABP-Hb adducts have, however, been used to distinguish smokers from non-smokers. The levels of 4-ABP-Hb adducts in non-smokers have been reported to be about one fifth the level found in smokers [82,83]. In one study, BPDE-1-DNA adducts were of little value in distinguishing the two groups [83]. Over a 48 h period, there was little consistency in the presence of adducts in smokers, with many smokers having no detectable levels. Additionally, there was no apparent correlation between the level of 4-ABP-Hb adducts and the level of BPDE-1-DNA adducts in either group.

Adducts of 4-ABP-Hb and 3-ABP-Hb have been measured in the blood of non-smokers with varying degrees of exposure to ETS as assessed by the presence or absence of detectable serum cotinine [82]. In non-smokers exposed to ETS, the 4-ABP-Hb levels were about 40-fold higher than the level of 3-ABP-Hb which in many subjects was below the limit of detection. Due to the lack of a clear cut effect of ETS exposure on 4-ABP-Hb adduct levels, and the inconsistent detectability of 3-ABP-Hb adducts, the usefulness of these markers to discriminate non-smokers exposed to ETS from those who are not exposed, appears questionable.

Recent studies indicate that the turnover of adducts may be more rapid than originally thought, limiting their usefulness to monitor chronic exposure. While the lifespan of haemoglobin is 120 days [81], levels of 4-ABP-Hb adducts in smokers returned to background levels in 6-8 weeks following cessation of smoking.

[82]. NNK is a tobacco-specific nitrosation product of nicotine that is present in MS and SS and has been classified as carcinogenic in animals [85]. Removal of adducts induced by the injection of NNK, has been examined in rats [69]. Rates of removal of different adducts in target tissues was variable and rapid, occurring within several days. These data indicate that NNK-induced adducts may not be useful as a dosimeter for tobacco smoke exposure.

A very sensitive method for examining the presence of adducts is ³²P post-labelling. This technique provides a semi-quantitative estimate of the adduct level in a tissue. At present, there has been little application of this technique in assessing exposure to ETS. In spite of its sensitivity, there are limitations associated with the ³²P post-labelling technique. It does not allow identification of the adduct, and basal levels of adducts are reported to increase with age, at least in animals [86]. Using this technique, no increase in DNA adducts was reported in monocytes of non-smokers heavily exposed to ETS [87].

In order to compare the potential risks of exposure to ETS with those reported for active smoking, an extrapolation from high-dose exposure to low-dose exposure is required. DNA adducts have been proposed as a means to do this. The relationship between external dose and biological dose, as assessed by DNA adducts, is dependent on the absorption, distribution, metabolism and excretion of the chemical of interest. The interpretation of biological dose using DNA adducts is influenced by several factors, including the location of the adducts on the genome as well as the mutagenic efficiency of the material, including the base that is modified and the effectiveness of the repair process. Additionally, for certain chemicals, the level of adduct formation is not linearly related to the dose administered. From the existing data, no absolute information is available relating the presence of adducts to a quantitative or qualitative assessment of exposure to ETS.

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As a measure of exposure to ETS, studies have been conducted on the capability of concentrated extracts from the urine of non-smokers and persons exposed to ETS to induce mutations in bacteria [88–94]. The rationale behind this approach is that the presence of mutagens in the urine may be an indication that the person has been exposed to chemicals that can ultimately induce cancer. Compared to the mutagenicity of the urine of smokers, activity in the urine of those exposed to ETS is quite low, variable and not always above background levels.

A number of problems exist with the studies attempting to relate urinary mutagenicity to ETS exposure. The experimental conditions of exposure to ETS have often been unrealistic in comparison to that occurring in the ambient environment. Methodological differences exist among studies possibly contributing to some of the inconsistencies. The studies have not always been controlled for the presence of dietary mutagens, an important confounding factor [95]. Importantly, the putative mutagens have not been identified. Finally, the biological significance of low-level mutagenicity in urinary concentrates has not been established. Due to these factors there is little reason, at present, to believe that urinary mutagenicity can be used to assess exposure to ETS or to assess risk to cancer [93].

Extrapolation models

An important consideration in the dose-response analysis of risk assessment is the extrapolation model used at the low-dose end of the curve. Traditionally, the linear non-threshold dose-response model has been used in the quantitative risk assessment of carcinogens. Current evidence brings this concept into question [96] and necessitates a rethinking of this process. The theory presented is that, at low doses, initiation may occur but unless exposure to high doses of promoters then occurs, tumours will not develop. This line of reasoning has considerable impact on the procedures used for analysing low-dose exposure as it relates to extrapolation of cancer risk from active smoking to exposure to ETS.

In spite of the distinct differences in dose received from active smoking and exposure to ETS, the extent of exposure to ETS and active smoking has been compared through the use of cigarette equivalents [21,40,43,46,47,65,97]. This approach attempts to convert exposure to ETS into an equivalent exposure from active smoking with the assumption that the risk from ETS exposure is proportionally comparable to the risk from active smoking. This procedure is an oversimplification of the exposure conditions and will provide potentially misleading information [3].

Pathophysiological consequences and implications

As indicated above, it is extremely difficult to extrapolate from active smoking to ETS exposure with any degree of reliability. Similarly, the data do not point to consistent evidence of pathophysiological consequences of ETS based on exposure and dose. Some examples will be presented to illustrate this point.

Several studies have reported that, functionally, smokers may have reduced ventilatory function at rest and a reduced exercise capacity with a greater oxygen debt accumulation [98–101]. For ETS-exposed non-smokers, the effects on ventilatory function and exercise capacity reductions are not consistent. While a few studies show some functional impairment, the majority do not. First of all, it is difficult to determine if the test situation mimics real-life exposure. The conditions to which subjects are exposed are often not relevant to ETS exposure. One study where subjects were passively exposed to cigarette smoke illustrates this point [102]. After drawing the puff through the apparatus consisting of a solenoid, capacity vessel and pump, the MS was discharged into the test room along with the SS. Therefore, the subjects were essentially breathing diluted quantities of the same constituents as an active smoker. The exposure conditions were also rather

extreme. Initial concentrations of particulate matter were $>4\text{mg}/\text{m}^3$ and carbon monoxide levels were 24 ppm. After 2 h, the particulate concentration dropped to only $2\text{mg}/\text{m}^3$. Therefore, these conditions are not representative of ambient ETS exposure.

Even in this study [102], no change was found in the FEV₁ of the subjects at rest. When bicycle exercise was performed, the only change found was a slight increase in heart rate at two to five time points that was statistically significant but not biologically important.

Another problem in trying to identify possible effects of ETS on pulmonary function is the inaccurate or broad ranges of exposure as represented in either the ETS-exposed or -unexposed groups. Usual confirmation of ETS exposure or lack of active smoking is through questionnaires without chemical confirmation. No matter how limited chemical confirmation techniques are, questionnaires are less reliable. Most epidemiological studies involve spousal exposure and ignore whether smoking occurs in the home to any significant degree or whether spousal exposure is compounded by workplace or social exposure. Intuitively, it might be expected that smokers socialise with others who also smoke more often than do non-smokers. The other major consideration may be tied to the general health status or awareness of smoker households compared to non-smoker households. It would seem very important to match groups for diet and exercise as well as other health indicators.

Functional studies

In contrast to the studies reported on MS, it would appear that there is little agreement among studies as to the effects of ETS on pulmonary parameters. Even within studies, unexplainable peculiarities appear that raise questions of reliability. Certain age groups of particular populations are found to be affected where other population segments in the same study show increased pulmonary function capability. In a comprehensive review of

this subject the results of studies were regarded as being too variable to permit a conclusion concerning long-term ETS exposure and possible impaired respiratory health or pulmonary function in non-smoking adults [103].

Studies typically are further complicated by the possibility of suggestibility. Suggestibility is the reverse of the placebo effect. These studies are performed to determine the magnitude of the psychosomatic effect and hope to answer the question: "If the subject expects an adverse effect to occur, will this be reflected in a measurable response?" Here again, there is no good agreement. One study reports a 50% increase in airways resistance following a positive suggestion that the subject would be breathing a substance that may be irritating and make it harder to breath [104]. In another study, subjects who could easily tell whether or not they were breathing the smoke, were exercised at a level to increase minute ventilation to about 2.5 times resting ventilation. These subjects showed a dose-related response to sham or zero smoke, and two levels of ETS exposure [105]. The magnitude of change in pulmonary function parameters was minor in most cases and of no physiological significance. The experiment was flawed by the failure clearly to separate the psychological influence from the physiological effects and to establish any real controls, whereas the previously cited study [104] unquestionably separated the two components. Furthermore, in this study [105] it appeared that all smoke, including the MS generated by the smoking machines, was presented to the subjects.

The question of allergic response to tobacco smoke has been raised frequently, and was investigated by McDougall and Gleich [106], who reported that tobacco and tobacco smoke allergies were not demonstrable. It might thus be concluded that most of the apparent irritation in the presence of ETS is psychologically based.

When considering asthmatic patients, where active smoking has sometimes

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been reported to be capable of triggering attacks, the evidence is not well established for ETS. Pulmonary function tests of asthmatics produced no change in expiratory flow rates. However methacholine challenge did produce a slight but significant increase in airway reactivity [107]. Other investigators studied the effects of ETS on asthmatics and found variable and inconclusive results in pulmonary function, but again found the increased reactivity to challenge; this time to histamine [108]. The results seem reasonable; however the regimen was not clearly stated. The mixing of MS and ETS may be a confounding problem of this study, as well. In summary, these results suggest a highly variable functional response to ETS even under laboratory conditions.

Cancer types, locations and frequencies

Use of tobacco products has been reported to be associated with cancers of various types and in various organ systems depending upon the tobacco product used. A review which addresses the comparisons between active smoking and exposure to ETS, concludes that more research needs to be done to demonstrate a strong association between ETS and cancer in the non-smoking population [109].

These authors begin with the hypothesis that the association between ETS and lung cancer must be possible based on the evidence from active smoking. They then examine the criteria set forth in the Surgeon General's report of 1964, and cite the inconsistencies in the results of both prospective and case-control studies. They make a specific point of the necessity for carefully documenting tumours using good histopathological techniques. In their own previously reported and unreported studies, they found that there is a preponderance of Kreyberg type I class tumours associated with smoking. In never-smokers, the preponderance of tumours are classified as Kreyberg type II. Within these categories the squamous cell type (type I) was predominant in smokers, "with lesser but

significant causative effect on the glandular type". In non-smokers, the predominant type is the glandular adenocarcinoma type II tumour. Other authors [110-111] suggest that ETS is limited to squamous cell types of tumours. If this is the case, the numbers of tumours potentially attributable to ETS would be very small considering the low incidence of this type of lung cancer in non-smokers. There is some support for squamous cell tumours being the most likely to be caused by ETS [112], quoted by the US Surgeon General [113]. In a closely monitored study in Olmsted County, Minnesota, Beard and his colleagues found that the incidence rate for squamous cell tumours dropped remarkably in the 1965-1974 period, presumably as smoking decreased. Small cell tumour incidence, also associated with smoking, decreased but not as dramatically. The incidence of adenocarcinoma continued to rise. There are several conclusions that can be drawn:

1. If Dalager et al. [110] and Persnagen et al. [111] are correct in concluding that squamous cell and small cell tumours are the predominant types associated with both smoking and exposure to ETS, then the risk of lung cancer from ETS is very small since this tumour is rare in non-smokers
2. Since adenocarcinoma of the lung continued to rise in the Olmsted County study and is purported by some investigators to be the predominant type for ETS exposure, the association between ETS and adenocarcinoma is incorrect, meaning that some other cause is associated with the development of adenocarcinoma of the lung.
3. ETS may not, in fact, cause cancer of the lung at all, or if it does, perhaps it is associated with several types of tumours but not at a very high level

Regardless of who is correct, more careful documentation is necessary of the histological types and incidence of lung tumours in order to determine an accurate and meaningful risk.

Conclusions

Since ETS has not been adequately characterised, there are insufficient data on which to base a hazard analysis. Accordingly, there are not enough data available on which to base an exposure assessment for ETS. Due to the dynamic nature of ETS, it is impossible to relate ETS to MS chemically or physically. In the absence of this relationship, it is inappropriate to make any extrapolations from what is reported about the effects

of active smoking to possible effects of exposure to ETS. Therefore, any calculation of risk from exposure to ETS based on extrapolations from calculated risks of active smoking is, at best, not reliable and, most probably, of no value whatsoever. It is important, therefore, to consider ETS as a distinct entity, and further research is needed to test hypotheses based on valid protocols that meet the criteria established for the epidemiology of weak associations.

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APPENDIX II

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AIRCRAFT AIR QUALITY

- Calls for smoking restrictions and bans aboard commercial aircraft are based upon rhetoric regarding health and exposure claims, not substantive scientific data. Available research indicates that smoking bans will do little, if anything, to remedy common complaints of dry, stuffy air aboard commercial aircraft.
- In a comprehensive review of the relevant data on aircraft air quality and nonsmoker health, an environmental specialist concluded that "the available scientific evidence does not support the prohibition of smoking on commercial aircraft". He also noted that the available data "suggest that factors or substances" other than tobacco smoke "may be major contributors to subjective complaints of discomfort by passengers and flight crew."¹
- Data from in-flight measurements of tobacco smoke constituents indicate that the contribution of tobacco smoke to cabin air quality is negligible, posing no demonstrable adverse health consequences for passengers or crew.²⁻⁷ One of these studies, conducted in Europe in 1989, involved the most comprehensive testing and analysis of aircraft cabin air quality to date.² The results indicate that total exposure to tobacco smoke aboard aircraft is "rather small and insignificant in

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comparison to total life exposure to air pollution." The researchers concluded that any possible health effects were "not likely to have been elicited" by such exposures aboard flights. They also noted that irritation and annoyance commonly attributed to such exposures may have been "potentiated by the low humidity, high temperature and high carbon dioxide levels found."

- Other studies reached similar conclusions. For example, the principal author of a 1987 study of a commercial airline in the U.S. noted that the typical amount of tobacco smoke in no-smoking sections of the aircraft is so small that it would take 224 hours, or more than 9 days of non-stop flying, to reach the exposure equivalent of the nicotine in a single cigarette.³
- A study of flight attendants during transoceanic flights measured body fluid levels of nicotine and concluded that the concentrations were so small that they were "unlikely to have physiologic effect."⁶ Another study of flight attendants measured exhaled carbon monoxide (a tobacco smoke constituent) and reported that the concentration of smoke to which the attendants were exposed was "too low to alter significantly their expired air carbon monoxide levels."⁷

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- In 1989, an Australian specialist in occupational health and preventive medicine concluded that the available data "do not lend support to the hypothesis" that exposure to tobacco smoke "may present a risk to the health of cabin staff or passengers." He further observed that providing smoking and nonsmoking sections "meets the reasonable requirements of passengers."⁸
- Tobacco smoke, because it is easily seen, is readily blamed for passenger and crew discomfort. But other aspects of the cabin environment, including poor ventilation and the presence of carbon dioxide, ozone and low relative humidity, may create discomfort. For example, the President of the U.S. Aviation Safety and Health Association suggested that "the real culprit" is the lack of fresh air ventilation.⁹ Listing a number of complaints ranging from headaches, dry throats and coughs to fatigue and dizziness, he concluded that "these symptoms are not related or caused by smoking aboard aircraft. Nor will a smoking ban of any length correct this fresh-air deficiency."
- Restrictions and bans on smoking aboard commercial aircraft have been imposed despite the lack of convincing data suggesting that tobacco smoke may affect cabin air quality or the health of nonsmokers during flights. A case in point is the 1989 decision by the United States Congress to ban smoking

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aboard flights of six hours or less, meaning the virtual prohibition of all smoking since few domestic flights last that long. A brief history of this prohibition suggests the largely political motivation behind the ban.

- In 1987, the U.S. Department of Transportation (DOT) rejected a proposed ban recommended by the National Academy of Sciences¹⁰ because it was not supported by data associating health effects and tobacco smoke exposures aboard aircraft.¹¹ Nonetheless, the next year, Congress voted to impose a temporary ban on smoking aboard domestic flights of two hours or less. The DOT subsequently issued a request for proposals to monitor in-flight exposures to tobacco smoke and other indoor air constituents¹² for the purpose of aiding Congressional deliberations on this subject. However, Congress decided not to wait for the results of the study, which became available several months after it had voted for the ban.
- The final DOT report¹³ contained data for selected constituents from tobacco smoke and other sources collected aboard commercial flights, as well as a theoretical health risk assessment based upon the data. The data on tobacco smoke constituents suggest that individuals seated in nonsmoking sections are exposed to extremely low levels of those

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constituents. These data would seem to justify the assumption that separate seating minimizes the nonsmoker's exposure to cigarette smoke. However, the data also indicate extremely high levels of carbon dioxide from passenger respiration on the majority of all flights, which in turn suggests the possibility of poor ventilation and poor air quality regardless of the presence or absence of cigarette smokers.

In a recent presentation on the DOT study, one of the principal scientists responsible for the study recommended that "the first question I would ask is whether or not Congress knew that the ETS results were not strongly compelling prior to the study's release and as a result preempted the use of the results in the deliberations on whether or not to make the ban permanent."¹⁴

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WORKPLACE SMOKING ISSUES

WORKPLACE SMOKING ISSUES

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WORKPLACE SMOKING ISSUES

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I. HEALTH CLAIMS

- The claim that exposure to environmental tobacco smoke (ETS) in the workplace causes disease in nonsmokers is not justified on a scientific basis.

Exposure

- Measurements taken in offices, workplaces and public places indicate that the contribution of tobacco smoke to indoor air is minimal.¹ For example, typical nicotine measurements (which are particularly revealing because nicotine is unique to tobacco smoke) range from an exposure equivalent of 1/100 to 1/1000 of one filter cigarette per hour.² In other words, a nonsmoker would have to spend from 100 to 1000 hours in an office, restaurant or public place in order to be exposed to the nicotine equivalent of just one cigarette.

Lung Function

- A 1980 report³ which concluded that nonsmokers exposed to tobacco smoke at work for 20 or more years had reduced function of the small airways compared to nonsmokers not so exposed still receives considerable attention, although it was heavily criticized for questionable data acquisition and analysis.⁴ In contrast, a more recent study of 1,351 German office workers reportedly found "no evidence" that everyday exposure to

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tobacco smoke in the office or at home leads to an essential reduction of lung function in healthy adults.⁵

Lung Cancer

- Nine of the published studies on spousal smoking and lung cancer examined workplace exposure to ETS and the incidence of lung cancer in nonsmokers.⁶ Not one of the studies provides adequate support for an association between ETS exposure in the workplace and lung cancer.

Allergy

- One of the most widespread beliefs, especially in the workplace setting, is that some nonsmokers are "allergic" to tobacco smoke. Scientific researchers, however, have not identified specific allergens in tobacco smoke.⁷ Thus, while some individuals may react to the sight or smell of tobacco smoke, this does not mean that they are experiencing an "allergic" reaction to it.

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II. SICK BUILDING SYNDROME

Because it is visible and easily identified by its aroma, environmental tobacco smoke is often blamed for indoor air quality problems. Government and private studies of "sick buildings" in the United States, Canada and Europe report, however, that tobacco smoke may be involved in only two percent to five percent of the buildings investigated for complaints about air quality.¹ For example, from 1981 through 1987, one company studied indoor air quality in 223 different buildings, accounting for over 39 million square feet of property, and found that ETS was a significant concern in only 10, or 4%, of the buildings [Robertson, 1988]. In another SBS database, smoking was implicated as a major contributor to complaints in only 12 of 408 (<3%) of the buildings surveyed [Collett, 1989]. The National Institute for Occupational Safety and Health (NIOSH) investigated more than 200 "sick" buildings and found that tobacco smoke was the source of claimed discomfort in only 2% of the buildings investigated. Ventilation problems were associated with half the complaints; outdoor air was considered a bigger problem than ETS [Melius, 1984]. Other investigators concluded that bacterial and fungal contamination is a major source of indoor air problems [Collett, 1989; Robertson, 1988].

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- Inadequate ventilation exacerbates all indoor air quality problems. This suggests that even a total smoking ban is not likely to affect comfort problems in 95 to 98 percent of "sick buildings."²
- The majority of indoor air quality problems in "sick buildings" have been traced to inadequate fresh air and poor air filtration. Because the visibility of tobacco smoke may be an indicator of inadequate ventilation, the prohibition of smoking serves to mask the real reason for poor indoor air quality--lack of proper ventilation. In addition, concentrating on tobacco smoke ignores the fact that adequate ventilation should always be provided in any enclosed space, regardless of whether or not smoking is permitted.

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III. VENTILATION

- In 1981, The American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE) issued a ventilation standard for public places (ASHRAE 62-1981).¹ The Standard established two levels of ventilation, one for areas in which smoking was permitted, and another substantially lower rate for areas where smoking was prohibited. The Standard was recently revised and reissued (ASHRAE 62-1989) with one prescribed ventilation rate, regardless of whether smoking was permitted or not. The decision to reject separate ventilation rates for smoking and nonsmoking areas was influenced by two areas of research: (1) The amount of ventilation required to remove indoor contaminants produced by humans, namely carbon dioxide and body odor, is also sufficient to remove typical amounts of ETS; and (2) ventilation rates for nonsmoking areas under ASHRAE 62-1981 were found to be inadequate and permitted airborne substances to increase, even in the absence of ETS.²
- Operating costs for increasing ventilation to meet specifications set forth in ASHRAE 62-1989 have been estimated at 3-5% over current annual energy expenditures for office buildings. Compliance with ASHRAE Standard 62-1989 will apparently have little effect on annual energy budgets.³

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IV. ACCOMMODATION

- Since the claim that exposure to tobacco smoke causes disease in nonsmokers is not scientifically justified,¹ the real issue regarding the "right" to smoke-free air is whether or not smoking should be prohibited because some people consider it to be an annoyance or nuisance.

Annoyance:

- Tobacco smoke may be an annoyance or nuisance to some people, but such complaints typically arise in poorly ventilated areas. Such complaints are most frequently associated with inadequate ventilation and to indoor substances other than ETS [See Section II: "Sick-Buildings"].
- Regulating a behavior such as smoking merely because some see it as an annoyance has undesirable consequences. Numerous individual behaviors could fall into the category of "annoyances," and to demand restrictions on all those potentially "annoying" behaviors is "to call for government regulation of everything."²
- Such regulations also reject the real possibility that people can work things out among themselves and may place a minority

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of individuals in the position to dictate what is "right" for everyone.

- The alternative to intrusive regulation is good manners, common courtesy and cooperation between smokers and nonsmokers. This alternative preserves the delicate balance of individual rights and allows for accommodation of everyone's desires.

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The Separation Issue:

- The 1986 Report of the Surgeon General on ETS suggests that separation of smokers and nonsmokers is not effective in minimizing the nonsmoker's exposure to ETS. That claim was made without scientific support. Indeed, subsequent research indicates that simple separation of smokers and nonsmokers effectively minimizes ETS exposures for nonsmokers.¹⁻³
- One recent study reported that the use of designated smoking areas reduced exposure to ETS by 95%.¹ Another study of a smoking-restricted office building reported that ambient nicotine in nonsmoking areas was virtually undetectable, suggesting that ETS had a negligible impact on the nonsmoking areas of the building.²
- Canadian researchers, in a series of reports, presented results on levels of ETS constituents in offices where smoking was regulated and unregulated. They reported no significant differences in average ETS constituent levels between nonsmoking offices that received recirculated air from designated smoking areas and nonsmoking offices that did not receive recirculated air.³ They concluded:

The results indicate that the provision of a designated, but not separately ventilated smoking area can effectively eliminate or

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drastically reduce most components of environmental tobacco smoke from nonsmoking offices.

- A federally-sponsored study of ETS in aircraft cabins indicates that separation of smokers and nonsmokers is an effective means for reducing exposure to ETS.⁴ The authors reported that many ETS constituent concentrations in nonsmoking sections were below the limit of detection. Similar results have been reported in other studies.⁵

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APPENDICES

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Smokers' Rights In the Workplace: An Employee Guide

How should I respond if my employer says that nonsmokers have a legal right under state or federal law to insist that smoking be banned in the workplace?

What are my rights as a nonsmoker?

Most companies have strict smoking policies?

Some anti-smokers are harassing me. What can I do?

How can I prevent a strict anti-smoking policy or smoking ban from being enacted, if no one is required by law?

What should I say to someone who wants to enact a strict smoking policy or smoking ban not required by law?

Can my union help?

What are my exemptions? What types of workplace smoking policies exist?

All employees complain about poor air quality. Is smoke necessarily the cause?

How can I counter claims about the negative health effects of environmental tobacco smoke?

How can I respond to claims that smokers are less productive than nonsmokers?

How can I persuade my fellow employees to speak out against workplace smoking restrictions that are not required by law?

Can my employer prohibit me from smoking off the job?

To what extent should government regulate smoking in my workplace?

What can I do as a citizen to fight proposed workplace smoking restrictions?

Overview

Job security, wages, health benefits and child care are just some of the many issues facing workers and management today. Some of these issues stir the interest and concern of workers more than others do.

Workplace smoking is one issue of current interest. In some situations, workplace smoking is strictly governed by state or local laws or regulations. In other situations, however, employers and employees have the ability to fashion their own approach to this issue. In many of these cases, a reasonable and accommodating decision is reached. However, in some instances, further discussions are needed.

To resolve workplace smoking disputes reasonably, and to prevent unfair and unnecessary restrictions, you must fully understand the facts about workplace smoking, methods for accommodating—and satisfying—both smokers and nonsmokers, and your rights and responsibilities as a smoker. You must, of course, also be aware of any laws that apply.

What follows are answers to common questions about smokers' rights in the workplace. If your employer has adopted an unfair policy, is considering adapting a smoking policy or is currently drafting one—or if you are being harassed by your employer or other employees for smoking on or off the job—this booklet is designed to help you. For further information, including information about applicable laws or regulations, contact The Tobacco Institute at 1875 I Street, Northwest, Washington, D.C. 20006.

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How should I respond if my employer says that nonsmokers have a legal right under state or federal law to insist that smoking be banned in the workplace?

According to state law, employers must provide a reasonably safe working environment. Anti-smoking advocates sometimes interpret this obligation as giving them a right to demand that smoking be banned in the workplace. Only once, in a lower court ruling in 1976 in New Jersey, has a court agreed with such an interpretation. This decision was limited to New Jersey, and the theory was later rejected in a case in the same state in 1983.

In the second case, an employee tried to force her employer to adopt a variety of smoking restrictions. In ruling against the employee, the court wrote

What we are really being asked for here is to impose upon every employee . . . who wishes to smoke a regime, a form of discipline which goes well beyond the reasonable, all under the guise of catering to the very particularized needs of a supersensitive person. That is not appropriate.

The court concluded:

[T]here simply is no warrant and no justification as a matter of civilized management of a work force to treat smokers as though they were moral lepers and to banish them to a remote isolated area of the workplace and that [w]hen one gets right down to it is essentially what the plaintiff it seems to me is asking for in this case.

Claims that the U.S. Constitution guarantees a totally smoke-free environment also have been unanimously rejected by the courts. In that connection, a federal district court judge in Louisiana wrote in 1976 that to find in the Bill of Rights of the U.S. Constitution a right to a smoke-free environment . . .

would be to mock the lofty purposes of such amendments and broaden their penumbral protections to unheard-of boundaries . . . The inevitable result would be that type of tyranny from which our founding fathers sought to protect the people by adopting the first ten amendments.

Nevertheless, many local governments, and some state governments as well, have enacted laws that govern smoking in the workplace. If your employer tells you that he is simply attempting to comply with applicable laws or regulations, ask him to show you the precise legal basis for his actions. Then contact your bargaining representative—or The Tobacco Institute—to determine whether the law requires your employer to act as he proposes to do.

What are my rights as a smoker?

Apart from any requirements established by law, your rights are determined by common standards of human behavior. For example, you are entitled to common courtesy and respect from others for your personal lifestyle and preferences—including your choice to smoke. If your employer decides to implement workplace smoking restrictions, you should insist on the right:

- To be consulted before a policy is adopted
- To be reasonably accommodated by the policy
- To have your preferences considered on an equal basis with nonsmokers
- To take any dispute or policy discussion to your union, if you are represented by one
- To be free of harassment, verbal or otherwise, and
- To be told the legal basis for the policy.

No. Very few companies completely prohibit smoking. In fact, 81 percent of companies permit smoking.

Most employers prefer to review smoking disputes on a case-by-case basis and to accommodate both smoking and nonsmoking employees. The firms that have developed policies have done so primarily to reduce smoking around sensitive equipment or food processing areas or to comply with city or state regulations.

Do most companies have strict smoking policies?

Arrange a private meeting to raise your concerns with those who are harassing you. Discuss your differences. Work on ways to prevent them from straining office relationships further.

If they won't cooperate or meet, say firmly that you don't want to alarm management unnecessarily with your concerns. Say that, on the contrary, you would prefer to work out the issue quietly and calmly amongst yourselves.

If that doesn't work, arrange a meeting with management to discuss the issue. Request the presence at the meeting of the person harassing you and your supervisor as a gesture of willingness to reach a solution that is balanced and fair to all parties. At the meeting, express your interest once again in reaching a solution that accommodates everyone.

Some anti-smokers are harassing me. What can I do?

**How can I prevent
a strict anti-smok-
ing policy or
smoking ban from
being enacted, if
none is required
by law?**

Schedule a meeting to discuss the issue with those responsible for developing the policy or ban. Before the meeting, do some research

- Find out the company's existing smoking policy. If none exists, find out if any local or state ordinances apply.
- Talk to friends at companies like your own and ask about any smoking restrictions there. Reasonable smoking policies may exist within your industry that could help your company.
- Research "successful" smoking policies that try reasonably to accommodate both smokers and nonsmokers. (A total smoking ban is not a reasonable accommodation!)
- Consider possible mechanical or structural solutions. Is your workplace properly ventilated? Would partitions reduce cigarette smoke and noise? Ask management to look into these possibilities.
- Identify informal solutions that could work in your work environment. For instance, you might try either moving individual smoking or nonsmoking employees or building physical barriers between smoking and nonsmoking employees.
- If a smoking policy is being imposed by management without employee input, ask that the workforce be consulted. Firmly but politely assert your rights.
- If you are represented by a union, discuss your concerns with your steward or other representative. Smoking policy decisions are subject to collective bargaining agreements in most cases. However, the union must speak up for its rights quickly! In addition, your union can ask management to call in an indoor air expert to analyze whether smoke is truly a problem. Most often, poor ventilation—not cigarette smoke—is at the root of poor indoor air quality.
- Recruit support from smoking and nonsmoking coworkers. The larger and more diverse your group, the more likely management will listen *and* respond to your concerns. If necessary, ask workers to sign a petition or letter of support. It's important to conduct such activities before or after work. Employers generally are more open-minded toward initiatives organized on employee rather than working time.

Now you are ready for that meeting. You've reviewed your situation and can sit down with those who are developing the policy to discuss the matter reasonably.

**What should I say
to someone who
wants to enact a
strict smoking
policy or smoking
ban not required
by law?**

Arrange a meeting with those who want the restrictions. During the meeting...

- Don't be angry or aggressive. Rather, keep a poised and professional appearance. Stress your willingness to work together to develop a smoking policy based on common sense and courtesy.
- Express your eagerness to reach a solution based on accommodation and compromise. Accommodations often are made for others in the workplace such as allowing employees to listen to music with earphones and moving worksites to avoid annoying neighboring employees. Similar accommodations should be extended to smokers. As one New Hampshire smoker recently noted, "The smell of coffee makes me nauseous and so do some perfumes. Should we ban those things, too?"
- Display your knowledge about the workplace smoking issue. It might reverse feelings toward an all-out smoking ban. Here are some facts you can mention:
 - There is no conclusive research that shows that smokers are less productive employees than nonsmokers. Nor do smoking employees cost their employers more.
 - Environmental tobacco smoke usually is not the cause of the problem, but rather a symptom of a problem—poor ventilation, poor filtration and general contamination of indoor air.
 - Regulating workplace smoking and settling office disputes are not prominent concerns of most personnel managers, and rightly so.
 - When smoking disputes arise, most firms prefer to settle them in a fair and positive manner rather than punish individuals who smoke.
 - Be prepared to suggest two or three alternatives to a smoking ban.
 - Report the support in the office for an informal smoking policy that satisfies both smokers and nonsmokers.
 - If, as a result of the meeting, you are unsuccessful in reaching an agreement, arrange to have a follow-up meeting. Suggest appointing a working group of smoking and nonsmoking managers and employees to resolve the issue. Or request the participation of representatives of labor and management.

Can my union help?

Yes. If you are represented by a union, take your concerns to your steward or other representative. Your union has a right to a voice in determining the rules that affect your workplace. That includes rules about smoking.

Unions can represent your interests through collective bargaining with your employer. They can help to ensure that the smoking restrictions in your office are not dictated by anti-smokers alone, but rather through joint labor-management agreement.

The AFL-CIO has stated that issues related to smoking on the job can best be worked out voluntarily in individual workplaces between labor and management in the manner that protects the interests and rights of all workers.

What are my options? What types of workplace smoking policies exist?

Subject to applicable laws and regulations, employees' options on workplace smoking vary with the layout and circumstances of their worksites. Sometimes, an informal agreement among employees and management defining the respective rights of smokers and nonsmokers will fill the bill.

For example, management can designate an entire work area as a smoking area, giving employees the option of designating their individual work stations as smoking or nonsmoking. Employees would be encouraged to resolve their disputes among themselves. Supervisors may intervene if necessary to make sure both smoking and nonsmoking employees are satisfied.

Formal smoking policies often are more detailed. Generally, they designate where employees can and cannot smoke, for example, in conference rooms and restrooms. Because they are more detailed in what can and cannot be done and how they must be enforced, supervisors have less say in resolving employee differences and cannot be as flexible in accommodating all employees.

Since most formal smoking regulations cannot be adapted to each and every workplace, a flexible approach is often the best avenue. For instance, smoking employees can be moved closer to other smokers, away from those who do not like tobacco smoke. Or, nonsmokers can have partitions that not only stop the direct flow of smoke but also direct cool air at their desks. The end result is that both smokers and nonsmokers are accommodated.

If employees complain about poor air quality, is smoke necessarily the cause?

No. Reports of sore eyes and headaches, usually high employee absentee rates and visible signs of poor ventilation, such as dirty air ducts and stale air, are symptoms of a very real problem known as "sick building syndrome."

Cigarette smoke often is mistaken as the primary cause of indoor air pollution. Tobacco smoke is visible; allergenic fungus, bacteria and invisible gases and fumes that cause symptoms such as coughing, sneezing and watery eyes are not.

In over half the buildings studied over a 15-year period for air quality complaints by the federal government's National Institute for Occupational Safety and Health (NIOSH), poor or inadequately maintained ventilating systems were determined to be the cause.

Firms specializing in analyzing indoor air quality have found evidence of incredible filth in building ventilation systems. This dirt contaminates the air employees breathe and prevents proper air flow. Thirty-eight percent of the buildings studied by one firm, ACVA Atlantic Inc., of Fairfax, VA, were found to have excessively dirty ductwork, including a "pet cemetery of dead rodents, pigeons, snakes and cockroaches."

ACVA Atlantic also found that 34 percent of the buildings they studied had no fresh air intake. To save energy costs, building managers had cut off the amount of fresh air coming into the building. The idea was to save money on heating the building during the winter and cooling it during the summer.

Thirty-one percent, moreover, had large amounts of allergenic fungi known to cause sore eyes, sore throats and other allergic symptoms similar to those sometimes blamed on environmental tobacco smoke.

One way to prevent unnecessary and unwarranted smoking restrictions is to ask your employer to run a check on the quality of air in your building. If there is a "sickness," often it can be cured by a flick of the switch on the building's air-handling system to bring more fresh air into the building. Sometimes, all the system may need is a routine cleaning.

**How can I counter
claims about the
negative health
effects of
environmental
tobacco smoke?**

Despite the lack of convincing evidence, the popular misconception persists that environmental tobacco smoke (ETS) has been shown to be harmful to nonsmokers in the workplace. However, the Surgeon General has stated that the data on workplace exposure to ETS are "limited and inconclusive." No reliable scientific proof exists to support the notion that smoke poses a risk to nonsmokers in the workplace.

After reviewing the scientific literature on environmental tobacco smoke, in a review critical of ETS, the National Academy of Sciences said available scientific evidence did not show that "smoking on the job or in public places, such as restaurants, [jeopardized] the health of nonsmokers."

An international conference on indoor air quality in London in June 1988 questioned not only the quantity of evidence but also the quality of the scientific methods by which environmental tobacco smoke and poor health has been linked.

Ready for a few more facts? Research has shown that to be exposed to the nicotine equivalent of one cigarette, a nonsmoker would have to fly in the nonsmoking section of an airplane for 224 straight hours, sit in a restaurant for 17 days and nights or work in an office for 550 continuous hours.

**How can I respond
to claims that
smokers are less
productive than
nonsmokers?**

Such assertions appear unfounded, and, at best, impossible to verify. Scientific establishment of these claims, notes Marvin Krislen, a consultant to the American Health Foundation, "would require studies and data we do not now—and most likely will never—possess."

Even William Weis, the Seattle University accounting professor who first proposed the notion that smokers are less productive, concedes that evidence linking employees, smoking and productivity is inconclusive. "Skeptics might argue that these numbers are as soft as the underside of a porcupine," he has written, "and that may be true."

Two-thirds of union officials and supervisors in government and industry say smoking has no significant effect on employee productivity. And, more than 90 percent believe that smoking has no significant positive or negative effect on employee productivity once employees return from smoking during their workbreaks. The same survey found that 64 percent believed a total smoking ban would negatively affect employee morale, leaving smokers alienated and feeling like second-class citizens.

Claims by smoking-restriction advocates that smokers are absent more often than nonsmokers *because* they smoke are unfounded. Experts on both sides of the issue agree that many factors are involved in absenteeism, including age, sex, family responsibilities, personal problems, job satisfaction and commuting time.

**How can I
persuade my
fellow employees
to speak out
against workplace
smoking restric-
tions that are not
required by law?**

Approach them individually, before or after work or on breaks, to discuss the restrictions in a calm and sensible manner. The emotions that frequently surround the issue encourage misunderstanding and often distort the issue. In your discussions . . .

- Mention that inter-office differences about smoking have existed for years, and that people always have been able to settle their differences through common sense and courtesy.
- Suggest that while cigarette smoke may be an annoyance, it is difficult to regulate annoyances, much less police them. Encourage greater understanding by talking about other annoyances in your own workplace—a colleague's blaring radio, excessive talking or overwhelming cologne. Ask how they would handle complaints about these, compared to those about tobacco smoke.
- Emphasize that by asking management to intervene in office smoking disputes or to establish formal smoking restrictions, employees concede greater control to managers than is necessary—or wise.
- Finally, point out that most formal workplace smoking policies affect secretaries and clerks in open-space areas, not professionals in private offices, and therefore discriminate against the majority of women and minorities who traditionally occupy secretarial and clerical positions.

**Can my employer
prohibit me from
smoking off the
job?**

Only if you let them. Allowing employers to dictate the personal lifestyle of workers both on *and* off the job is a wholly unjustified invasion of your privacy. If your employer establishes such a policy, assert your rights.

**To what extent
should
government
regulate smoking
in my workplace?**

No conclusive scientific proof exists to support the claim that exposure to environmental tobacco smoke in public places is a health risk to nonsmokers. Still, some government officials attempt to promote a "smoke-free society" by focusing on speculation rather than scientific fact. Although the evidence on the smoking and the nonsmoker health issue is inconclusive, they feel pressured to jump aboard and, in some cases, lead the nonsmoking bandwagon.

U.S. Rep. Charlie Rose (D-N.C.) spoke out against such efforts at a recent congressional hearing to consider a proposed ban on smoking in federal offices. He said, "Let's get the science straight. It's not straight right now. . . [We're] basing this so-called 'necessary act' on very shaky science." Rose's colleague, Rep. Harold Rogers (R-KY) rose to support him and to stress the time-tested success of common sense and courtesy.

George Cooper, a vice president of the New York Chamber of Commerce, opposed government intervention for other reasons. He questioned whether "a single specific law can deal with smoking conditions in the 190,000 business establishments in the city of New York." Cooper noted that since every business is unique, a better approach would be to address the issue at the company level.

What can I do as a citizen to fight proposed workplace smoking restrictions?

Letters are a relatively easy and inexpensive method to oppose smoking restrictions. They can create awareness of a pending proposal to restrict smoking and can persuade others to join your fight. In doing so, they become a very valuable and effective tool.

Smokers can write several types of letters—to the editor of your local newspaper, to your elected representatives and to your corporate management.

If you decide to write, identify yourself and explain simply and directly from the start why you are writing.

Example 1: I am very disturbed by Harry Smith's recent article (*Times*, Feb. 2) regarding smoking in public places . . .

Example 2: As an employee in Widget International's Detroit facility, I am very concerned about the proposed smoking restrictions under consideration by the company . . .

Example 3: As a small business owner, I oppose City Ordinance Number 4567, which would restrict smoking in public places . . .

Then, briefly summarize several supporting points—including any of those you have read here. Letters should be neatly written and not exceed one page. They also should include your home address and daytime phone number.

It's a good idea to send copies to others. Letters to the editor, for instance, also could be sent to your city council member, state representative or congressperson. Letters to your government representatives also can be sent to your newspaper editor or the editorial director of your local television station.

Some employers feel it necessary to establish workplace smoking policies. Some do not. For those who do, smokers are encouraged to work with their colleagues and supervisors to come up with a policy that is balanced and fair to all based on common sense and courtesy.

If you have additional questions on the workplace smoking issue,
or would like more information, write:

The Tobacco Institute
1875 I Street Northwest
Suite 800
Washington, D.C. 20006

2503010309

2503010310

The Tolbert Institute
3875 I Street, Northwest
Suite 300
Washington, D.C. 20007

Smoking in the Workplace: Some Considerations

The Tobacco Institute
1875 I Street Northwest
Washington, DC 20006

2503010311

2503010312

**Disputes
about where
and where to
light up have
been settled
with common
sense and
courtesy**

T

oday, management and workers alike are faced with a barrage of information and misinformation regarding workplace smoking issues.

Smokers and nonsmokers have lived and worked together in harmony for generations. Occasional disputes about when and where to light up have been settled individually, with common sense and courtesy. Now, there are some who would substitute laws and fines.

In many cases, proponents of workplace smoking restrictions are simply trying to force their own lifestyles on others. Unsuccessful in attempts to persuade many adults to quit smoking, those calling for broad restrictions are trying to keep people from smoking by segregating or otherwise punishing them for exercising their right of free choice.

These same supporters of workplace smoking restrictions also argue that this issue is a number one priority with management. Statistics, however, suggest otherwise.

In November 1988, The Washington Legal Foundation sponsored a survey of personnel policies in Fortune 1000 companies to determine what senior human resource managers identify as the most impor-

Environmental tobacco smoke has not been shown scientifically to pose a health hazard to nonsmokers

tant workplace issues, problems and concerns, and to understand the relative importance of various specific personnel policies. Sixty percent of senior human resource managers polled cited maintaining a competent and contented work force as their greatest challenge.

The survey also revealed that managers perceive wages, job security, and health benefits as the top priorities of employees. Only two percent cited workplace smoking as an "important human resource problem."

Nevertheless, some anti-smokers continue to press for restrictions, claiming that cigarette smoke is a health hazard to nonsmokers; others say smokers are more costly to their employers than nonsmokers. Still others claim a legal right to a smoke-free environment.

Health Hazard Not Proven

A detailed review of the scientific literature on environmental tobacco smoke (ETS) yields two basic conclusions:

- First, that ETS has not been shown scientifically to pose a health hazard to nonsmokers.
- Second, as a National Academy of Sciences panel noted recently, more and better research needs to be done.

In 1985, the International Agency for Research on Cancer (IARC) reviewed the quality of the evidence in the published reports then available on the ETS/lung cancer question. The IARC was critical of ETS research reports, concluding

that "each is compatible either with an increase or with an absence of risk." In other words, none established risk with any certainty.

U.S. Surgeon General C. Everett Koop acknowledged in December 1986 that more than half the studies used in his report on "involuntary smoking" found no consistent, statistically significant relationship between ETS and lung cancer in nonsmokers. In fact, a much higher percentage of the studies that have been done fail to find any such relationship.

A National Academy of Sciences (NAS) committee charged with reviewing the literature related to ETS reported late in 1986 that there is nothing in the scientific literature to support the conclusion that casual exposure to environmental tobacco smoke in public places—including the workplace—constitutes a health risk to nonsmokers.

Refutations of the premise that exposure to ETS causes adverse health effects in nonsmokers were also recorded in a February 1986 report in *Medical World News* that stated that "[s]olid scientific evidence of passive smoking's health risks to nonsmokers is as elusive as the smoke itself."

Yet another study in the July 1986 edition of the *British Journal of Cancer* concludes that environmental tobacco smoke carries no significant increase in risk of lung cancer, bronchitis or heart disease.

Serious weakness in ETS investigations cited by the Surgeon General have been noted by prominent independent scientists. The sci-

"Should law makers wish to take legislative measure with regard to passive smoking, they will for the present, not be able to base their effort on a demonstrated health hazard from passive smoking."

A National Academy of Sciences panel reported that there is nothing in the scientific literature to support the conclusion that casual exposure to ETS in the workplace constitutes a health risk to nonsmokers

entific community continues to point up the flaws in interpretation as well as some research methodologies that have been applied. Respected German biostatistician K. Uberla, in a 1987 review of the statistical evidence published in the *International Archives of Occupational and Environmental Health*, stated: "The volume of accumulated data is conflicting and inconclusive. The observations on nonsmokers that have been made so far are compatible with either an increased risk from passive smoking or an absence of risk. Applying the criteria proposed by the International Agency for Research on Cancer there is a state of inadequate evidence."

In a guest editorial in the June 1987 issue of *American Review of Respiratory Disease*, two noted Harvard Medical School professors, expressing their opinions against active smoking and in support of the Surgeon General's 1986 Report, stated: "The health impact of exposure to [ETS] at work, except for its irritation, is largely unknown. The report is on its weakest ground scientifically here."

While both insisted that ETS exposure is harmful to the health of the nonsmoker, the NAS committee and the Surgeon General also acknowledged that there is insufficient evidence to prove claims that environmental tobacco smoke impairs respiratory function or causes heart disease or allergies in adult nonsmokers.

A number of studies have shown that exposure to ETS in normal, everyday environments is

extremely low. For example, one recent study indicates that a non-smoking employee in a typical New York City office would have to work nonstop for almost 24 days—more than 550 uninterrupted hours—to be exposed to the nicotine "equivalent" of one cigarette.

Tobacco Smoke and Indoor Air Quality

Indoor air pollution today is becoming a major work issue in some office buildings. The universal use of air conditioning and increased reliance on controlled environments in modern office buildings has focused attention on "sick building syndrome."

Employee complaints of sore and watery eyes, abnormally high absentee rates and visible signs of poor ventilation, such as dust around ventilation ducts, all are potential signs of "sick building syndrome." Although visible cigarette smoke often is targeted as a cause of the problem, we know now that in many cases, it is a symptom, not a cause.

In fact, when it comes to poor indoor air quality, tobacco smoke appears to be among the least common sources. Reports by federal and private experts suggest that environmental tobacco smoke is related to discomfort of building occupants in just two to four percent of all cases. And even in those cases, studies indicate that improved ventilation may relieve the condition.

That means lawmakers and business managers will accomplish little or nothing even if they succeed

Visible tobacco smoke usually is a symptom, not a cause, of "sick building syndrome"

Once the underlying problem of poor ventilation is corrected, so too is any problem with ETS

in removing every last wisp of tobacco smoke from the workplace solely by prohibiting smoking. Complaints of health problems and irritations may persist.

The government's National Institute for Occupational Safety and Health (NIOSH) reports that of the 203 buildings it examined following occupant complaints, just four cases—or two percent—were attributable to cigarette smoke. An independent analysis of more than 300 major private and public buildings by ACVA Atlantic, Inc., an indoor air quality analysis firm, identified tobacco smoke as a major contributing factor to air quality complaints in only four percent—twelve buildings.

While NIOSH identified ETS as a problem in a tiny handful of cases, inadequate ventilation was blamed in 50 percent. ACVA investigations reveal that improper attention to indoor air circulation was responsible in the majority of cases for the spread and breeding of infectious germs and allergenic dusts and spores—not to mention fiberglass particles, asbestos, chemical fumes and a host of other hazardous airborne particles undetectable to the eye and nose.

Under normal conditions with ventilation that is operating according to established building codes, tobacco smoke very quickly dissipates. In fact, this disappearing act confirms that the ventilation system in an indoor area is working properly. In those few cases where visible ETS persists, the ventilation must be suspect immediately.

Problems with cigarette smoke should be viewed as a "tip off" to the much more serious underlying problem of inadequate or improper ventilation. The good news is that once the underlying problem of poor air circulation is corrected, so too is any problem with ETS.

Costs to Employers?

Eighty-two percent of the respondents to a 1980 survey of employers by the Bureau of National Affairs (BNA) for the American Society for Personnel Administration (ASPA) reported that the imposition of smoking restrictions had resulted in no cost savings or no savings that could be identified. Still, many proponents of workplace smoking restrictions cite studies that claim to show smokers are absent more frequently and incur higher insurance costs than nonsmokers.

But according to Marvin Kristein, an American Health Foundation economist who promotes economic arguments for workplace smoking restrictions, "we lack meaningful 'case-controlled' company comparisons of experience with smoking employees vs. nonsmoking employees vs. exsmokers and the impact on company cost." To achieve a scientific basis for such cost claims, Kristein admits, "would require studies and data we do not now—and most likely will never—possess." In fact, there is evidence that some smoking restrictions may actually increase business costs as smokers leave their desks for smoking breaks. For example, Dr. Robert

Some smoking restrictions may actually increase business costs

Numerous factors affect employee attendance, including job satisfaction, personal problems, family responsibility, commuting time, age and sex

Tollison, chairman of the Center for the Study of Public Choice at George Mason University, estimates that proposed legislation severely restricting smoking in federal buildings could cost \$309.5 million per year—\$867 per employee.

Smoking restriction advocates who argue that smokers are absent from work more often than nonsmokers rely on a statistical correlation that is weak at best. Experts such as UCLA economist Lewis Solmon argue that there is far too little evidence to draw such a conclusion.

Solmon notes that numerous factors affect employee attendance patterns, including job satisfaction, commitment to employer, personal problems, family responsibility, commuting time, age and gender.

As to the claim that smokers incur higher medical costs, Solmon stresses that such claims are based on studies alleging that smokers have a higher accident rate than nonsmokers. But, he notes, since smokers are most often found among blue collar workers, they are more likely to be engaged in strenuous physical activity which increases the likelihood of exposure to accidents.

Morale? Productivity?

Are smokers less productive than nonsmokers? Contrary to anti-smokers claim, much of the data suggest they are not.

Ninety-two percent of respondents to the 1986 BNA survey for ASPA said either that imposition of smoking restrictions had not increased worker productivity, or that

they did not know whether an increase in productivity had occurred. Only four percent believed restrictions had in fact increased worker productivity. And a 1981 study released by University of Minnesota researchers found that people who smoke tended to be more productive than those who do not.

A survey of union representatives and managers in business, industry and government by Response Analysis Corporation of Princeton, N.J., found that among almost 2,000 local union officials and first-level supervisors:

- Two-thirds of survey respondents said employee smoking either has a positive effect or no effect on productivity.
- Seventy-eight percent said a smoking ban would not enable their organization to accomplish the same work with fewer employees.
- Only three percent of respondents agreed that "not hiring people simply because they smoke makes sense."
- Of the respondents who said their organizations restrict smoking, less than three percent said they did so because smoking interferes with job performance.

A 1984 study by a University of Minnesota researcher found that smokers are more productive than nonsmokers

No Legal "Right"

Relevant case law provides virtually no support for the efforts of some anti-smokers to impose their views on employers and fellow workers. The courts have uniformly rejected arguments that a tobacco smoke-free

**The courts
have rejected
arguments
that a smoke-
free work-
place is guar-
anteed by the
constitution**

environment is guaranteed by provisions of the U.S. Constitution.

In cases where employees have tried to use common law to impose smoking restrictions, the courts generally have sided with the employer, most recently in a 1985 decision in *Smith v. AT&T Technologies, Inc.* There, the court noted that it "specifically does not believe or find from the evidence that the tobacco smoke at plaintiff's former workplace was harmful or hazardous to his health" or to the health "of the other employees in that area."

Accordingly, the court held that the employer had not breached any duty to its employees by refusing to segregate smokers from nonsmokers and to limit smoking to non-work areas of the building.

In Washington, D.C., in 1983, Judge William Pryor ruled that "Common law does not impose upon an employer the duty or burden to conform his workplace to the particular needs or sensitivities of an individual employee."

Smoking restriction advocates cite three decisions to support their claim of a universal right to tobacco smoke-free workplace: *Parodi v. Merit Systems Protection Board*, *Vickers v. Veterans Administration* and *Shimp v. New Jersey Bell Telephone*.

Parodi and Vickers involved claims by federal employees that their alleged hypersensitivity to tobacco smoke made them "disabled" or "handicapped" within the meaning of statutes applicable only to the federal government as an employer or to groups seeking federal aid. These cases have no relevance

aid. These cases have no relevance to the question of whether private employers have an obligation to provide a tobacco smoke-free environment.

The 1976 *Shimp* case, then, is the only one that has actually prohibited smoking in the workplace based on the theory that general common law can be used to compel smoking restrictions. A key determinant in *Shimp*, however, was the lack of any active defense by New Jersey Bell, which filed no answer to the complaint and submitted no affidavit in opposition to Shimp's request for a court order.

That the case has little precedential value is suggested by the court's dismissal of an identical complaint subsequently filed by Shimp's attorney before the same judge on behalf of another New Jersey Bell employee. In the second case, New Jersey Bell elected to defend itself.

In *Commonwealth of Pennsylvania v. Pennsylvania Labor Relations Board*, the court held that, for employees working under collective bargaining contracts, an employer cannot unilaterally impose smoking restrictions. Other decisions have established that, even where a broad "management rights" clause is contained in a collective bargaining agreement, such unilateral action may be subject to tests of reasonableness and equity.

The AFL-CIO has taken a position designed to protect the rights of its smoking members, opposing discrimination against smokers and calling for voluntary smoking policies

**Parodi and
Vickers have
no relevance
to the question
of whether
private em-
ployers must
provide a
smoke-free
work
environment**

For employees working under collective bargaining contracts, an employer cannot unilaterally impose smoking restrictions

devised cooperatively between labor and management.

Employment policies that discriminate against smokers are contrary to public policy and may violate state and federal laws. These same discriminatory policies that penalize employees who smoke raise fundamental equal protection questions. It is difficult to understand how discrimination against smokers can be rationally justified on productivity grounds. A secretary will not make more typographical errors than a nonsmoker. Nor will a bookkeeper add and subtract less efficiently if he or she smokes.

Legal questions aside, however, who would want to discriminate against smokers if the primary motive in hiring is to employ the best individual for the job?

Common Sense and Cooperation

Decisions involving smoking in the workplace are most appropriately committed to the good sense and common courtesy of smoking and nonsmoking employees. The question of when and how workers may smoke in the office is best settled by employer and employee consensus rather than by city council or state legislature.

**The Tobacco Institute
1989**

For more information on this and other issues write:

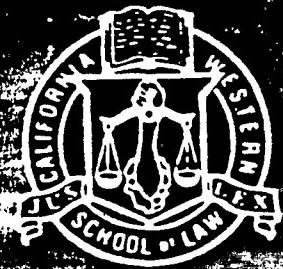
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SMOKING IN THE WORKPLACE: ACCOMMODATING DIVERSITY

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BERNADETTE M. DAVISON

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Smoking in the Workplace: Accommodating Diversity†

JOHN C. FOX*
BERNADETTE M. DAVISON**

INTRODUCTION

Historically, individuals who smoked typically felt free to do so when and where they pleased. Indeed, smoking in public places, including places of work, was generally unrestricted. Today, however, the interests of smokers and nonsmokers often compete on the job. This is especially true in workplaces where employees work side-by-side for long periods of time. While some employees adamantly seek to preserve their "right" to smoke on the job, other nonsmoking employees are pushing for a "right" to a smoke-free work environment. And, while smoking disputes are still generally resolved informally by management, now legislatures, courts and unions have become embroiled in the controversy.

In this Article, the authors present an overview of workplace smoking issues by surveying relevant case law, analyzing state and local legislation, and addressing the prominent role of unions regarding smoking in the workplace. In addition, the authors offer practical suggestions to employers about how to accommodate the competing interests of both smokers and nonsmokers. In doing so,

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the authors hope to assist employers in resolving workplace smoking issues.

I. BACKGROUND

Eighty-eight percent of all employers in the United States permit smoking in the workplace.¹ Of those employers that permit smoking, approximately one-half currently have no formal smoking policy.² Twelve percent of major employers in the United States ban smoking on the job.³ Of the employers that ban smoking in the workplace, many appear to do so around food preparation stations or where employees work near combustible materials. For example, gasoline refineries and chemical processing companies ban smoking almost uniformly due to the severe safety considerations attendant to those workplaces. Similarly, product contamination concerns led the Campbell Soup Company to ban smoking in the workplace beginning in approximately 1896.

Approximately one-fourth of adult Americans smoke.⁴ Higher incidences of smoking have been associated with lower income groups and blacks.⁵ It is therefore possible to experience great variations in the percentage of smokers and nonsmokers in any particular work force. Accordingly, employers often face competing

1. BNA, WHERE THERE'S SMOKE PROBLEMS AND POLICIES CONCERNING SMOKING IN THE WORKPLACE A SPECIAL REPORT 20 (2d ed. 1987) [hereinafter BNA, SPECIAL REPORT].

2. According to one survey of 1,100 employers, 63.8% have no formal smoking policy. A more recent survey of 623 employers indicated that 43% have no such policy. See *infra* note 109.

3. The vast majority of employers permit smoking somewhere on company premises. 51% prohibit smoking in open work areas and shared work spaces. BNA, SPECIAL REPORT, *supra* note 1, at 20.

4. According to 1987 statistics compiled by the Centers for Disease Control, 26.5% of adults in the United States smoke. *Id.* at 12.

5. PUBLIC HEALTH SERVS. U.S. DEPT' OF HEALTH AND HUMAN SERVS., THE HEALTH CONSEQUENCES OF SMOKING—CANCER AND CHRONIC LUNG DISEASE IN THE WORKPLACE REPORT OF THE SURGEON GENERAL 48-55 (1985) (hereinafter SURGEON GENERAL'S REPORT).

A 1986 study conducted by the Centers for Disease Control found that black men smoked at a rate of 32.5% while white men smoked at a rate of 29.3%. The prevalence of smoking was only slightly higher among black women (23.1%) than white women (23.7%). See *Cigarette Smoking in the United States, 1986: MORTALITY AND MORTALITY WEEKLY REPORT* 582 (Sept. 11, 1987) (distributed by the Massachusetts Medical Society).

A 1985 national health interview survey conducted by the National Center for Health Statistics also found greater incidences of smoking among blacks. See PUBLIC HEALTH SERVS. U.S. DEPT' OF HEALTH AND HUMAN SERVS., VITAL HEALTH STATISTICS: HEALTH PROMOTION AND DISEASE PREVENTION UNITED STATES 70 (1988).

For a collection of the results of numerous nationwide studies concerning the prevalence of smoking among blacks and whites, see Ethridge & Fox, *Toward a Civil Rights Approach to Smoking, CURRENTS* (April 1987) attachment I (published by the American Association for Affirmative Action).

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interests of a large group of smokers or an even larger group of nonsmokers. As a result, most employers find it prudent to accommodate, if possible, the competing interests of both smoking and nonsmoking employees. This is particularly true in this era of growing labor shortages, in which employers increasingly seek to retain happy and productive employees.⁶

While the decision to permit or limit smoking in the workplace is largely left to the discretion of employers, there are legal and practical limitations to such discretion. Accordingly, companies must proceed with care after a full evaluation of the facts and pertinent law. Further, employers are warned that the law regarding workplace smoking is still evolving.

The most significant limitations to management discretion regarding smoking in the workplace include:

(1) The common law duty to accommodate both smoking and nonsmoking employees;⁷

(2) Federal regulations, state statutes or local ordinances which limit smoking in the workplace;⁸

(3) The duty to bargain collectively with unionized employees about workplace smoking policies;⁹

(4) Management's obligation to accommodate nonsmoking employees who are found to be "medically hypersensitive" to environmental tobacco smoke (ETS) and who thus may be designated as "handicapped" pursuant to federal, state or local handicap laws;¹⁰ and

(5) The mandates of Title VII of the 1964 Civil Rights Act (Title VII) and other discrimination laws, which prohibit employer policies which have a "disparate impact" on minority and female employees.¹¹

Cases involving smoking may be based on constitutional rights, handicap discrimination acts, the Occupational Safety and Health Act (OSHA), Title VII, the National Labor Relations Act (NLRA), unemployment and workers' compensation laws, and common law theories, including wrongful discharge and negligence.

Discussed below are the various legal causes of action employ-

6. A recent survey indicates that a majority of human resource managers polled are most concerned with issues related to recruiting and retaining good employees. Nearly 60% responded that their greatest challenge is maintaining a competent and contented work force. 2 WASHINGTON LEGAL FOUNDATION, A SURVEY OF PERSONNEL POLICIES IN THE WORKPLACE (1988).

7. See *infra* notes 51-66 and accompanying text.

8. See *infra* notes 67-91 and accompanying text.

9. See *infra* notes 92-106 and accompanying text.

10. See *infra* notes 29-42 and accompanying text.

11. See *infra* notes 43-50 and accompanying text.

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ees have brought on both sides of the issue.¹² In general, the courts have been quite hostile to the claims of nonsmokers seeking a legal right to a smoke-free work environment. That same conclusion also appears to be emerging in the new wave of "smokers' rights" cases. The consensus of the courts appears to be that, absent any legislative limitation on management's discretion, employers need to accommodate the competing interests of both smoking and nonsmoking employees. For example, management must accommodate "handicapped" employees who are found to be medically "hypersensitive" to environmental tobacco smoke.¹³ On the other hand, unionized workers may have a right to smoke unless and until management has bargained in good faith to limit smoking in the workplace.¹⁴ At the same time, management must comply with any state statutes or local ordinances which may address smoking in the workplace.¹⁵

Inevitably, employers find themselves positioned between the competing interests of smokers and nonsmokers alike. In this situation, employers are well-advised to promptly and effectively accommodate these competing interests so as to avoid disruptive battles between employees. In some situations, employers may consider voluntarily formulating a reasonable smoking policy to assist them toward this end.

II. JUDICIAL RESPONSE TO WORKPLACE SMOKING

Workplace smoking issues have been litigated in the courts in a variety of contexts. Beginning in 1976, nonsmokers filed the first of a series of "test cases" seeking the legal right to a smoke-free

12. This Article does not address health or product liability litigation issues concerning tobacco use. For a discussion of the scientific evidence relating to environmental tobacco smoke, see generally NATIONAL ACADEMY OF SCIENCES, ENVIRONMENTAL TOBACCO SMOKE MEASURING EXPOSURES AND ASSESSING HEALTH EFFECTS (1986) (hereinafter NAS REPORT); SURGEON GENERAL'S REPORT ON ENVIRONMENTAL TOBACCO SMOKE—THE HEALTH CONSEQUENCES OF IN VOLUNTARY SMOKING (1986) (hereinafter SURGEON GENERAL'S REPORT); 38 WORLD HEALTH ORGANIZATION, INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, IARC MONOGRAPH ON THE EVALUATION OF THE CARCINOGENIC RISK OF CHEMICALS TO HUMANS TOBACCO SMOKING 308 (1986) (hereinafter IARC MONOGRAPH); and PROCEEDINGS OF INDOOR AND AMBIENT AIR QUALITY CONFERENCE, Imperial College (London, England, June 13-15, 1988) (hereinafter PROCEEDINGS).

See also Comment, *Judicial and Legislative Control of the Tobacco Industry: Toward a Smoke-Free Society?*, 56 U. Cin L. Rev. 317 (1987); and Crist & Majoras, *The "New" Wave in Smoking and Health Litigation—Is Anything Really So New?*, 54 Tenn. L. Rev. 551 (1987).

13. See *Parodi v. Merit Sys. Protection Bd.*, 702 F.2d 743, 749-51 (9th Cir. 1982); see also *infra* notes 37 & 38 and accompanying text.

14. See *infra* notes 92-106 and accompanying text.

15. See *infra* notes 67-86 and accompanying text.

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work environment.¹⁶ With a few limited exceptions, the courts have been hostile to the claims of healthy nonsmokers seeking a legal right to a smoke-free work environment. Instead, the general response of the courts has been that this is an issue best left to management discretion or the legislative process.¹⁷

A. Constitutional Claims

The courts have summarily rejected the notion that employees or members of the public have a constitutional right to an environment free of tobacco smoke. In the leading decision, *Gasper v. Louisiana Stadium and Exposition District*,¹⁸ a group of nonsmokers sought to prohibit smoking during sports and other public events at the Louisiana Superdome. The plaintiffs claimed that their exposure to tobacco smoke in the Superdome infringed upon their rights guaranteed by the U.S. Constitution. Specifically, the plaintiffs in *Gasper* alleged that exposure to tobacco smoke at the Superdome infringed upon their first amendment right to receive ideas; deprived them of life, liberty and property without due process in violation of the fifth and fourteenth amendments; and breached their fundamental privacy rights guaranteed by the ninth amendment. The court rejected each of the plaintiffs' constitutional arguments, and stated that to hold that the Constitution prohibits smoking would be to create an unprecedented avenue "through which an individual could attempt to regulate the social habits of his neighbor."¹⁹

Likewise, in *Kensell v. Oklahoma*,²⁰ a public employee's constitutional challenge to workplace smoking was also rejected. In this case, the court unequivocally stated that "the United States Constitution does not empower the federal judiciary . . . to impose no-smoking rules in the plaintiff's workplace."²¹ In sum, every court faced with the issue has concluded that employees have no constitutionally protected right to a smoke-free work environment.²²

16. See *Shimp v. New Jersey Bell Telephone Co.*, 145 N.J. Super. 516, 368 A.2d 408 (1976).

17. See, e.g., *Federal Employees for Nonsmokers' Rights v. United States*, 446 F. Supp. 181, 185 (D.D.C. 1978), *aff'd*, 598 F.2d 310 (D.C. Cir. 1979), *cert. denied*, 444 U.S. 926; *Gasper v. Louisiana Stadium & Exposition Dist.*, 418 F. Supp. 716, 722 (E.D. La. 1976); *McCarthy v. Social and Health Servs.*, 110 Wash. 2d 812, 826, 759 P.2d 351, 358 (1988).

18. 418 F. Supp. 716 (E.D. La. 1976), *aff'd*, 577 F.2d 897 (5th Cir. 1978), *cert. denied*, 439 U.S. 1073 (1979).

19. *Id.* at 721.

20. 716 F.2d 1350 (10th Cir. 1983).

21. *Id.* at 1351.

22. See also *Federal Employees for Nonsmokers' Rights v. United States*, 446 F. Supp. 181 (D.D.C. 1978), *aff'd*, 598 F.2d 310 (D.C. Cir.), *cert. denied*, 444 U.S. 926 (1979) (smoking in federal buildings does not violate Constitution); *GASP v. Mecklenburg*

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Similarly, the corollary to the nonsmokers' challenge, i.e., the smoker's asserted constitutional "right" to smoke, has also been rejected. In *Rossie v. Wisconsin Department of Revenue*,²³ the state intermediate appellate court found that a Wisconsin statute prohibiting smoking in all but certain designated areas of a state-controlled building did not violate the fourteenth amendment equal protection clause.

A prohibition against off-duty smoking, a restriction thus far imposed almost uniquely upon some police, fire and other public safety officers, has also withstood constitutional challenge.²⁴ In *Grusendorf v. Oklahoma City*²⁵ the court upheld a fire department's ban on off-duty smoking applicable to fire fighter trainees. The *Grusendorf* court agreed with the plaintiff that the smoking ban infringed upon liberty and privacy rights, stating:

It can hardly be disputed that the Oklahoma City Fire Department's nonsmoking regulation infringes upon the liberty and privacy of fire fighter trainees. The regulation reaches well beyond the work place and well beyond the hours for which they receive pay. It burdens them after their shift has ended, restricts them on weekends and vacations, in their automobiles and backyards and even, with the doors closed and the shades drawn, in the private sanctuary of their own homes.²⁶

Despite this finding, the court upheld the smoking ban because, under the circumstances, the city satisfied its burden of proving that the ban bore a rational relationship to the promotion of the health and safety of the fire fighters. Nevertheless, employer restrictions against off-duty behavior give rise to serious privacy

County, 42 N.C. App. 225, 256 S.E.2d 477 (1979) (smoking in county buildings and facilities not unconstitutional).

23. 133 Wis. 2d 341, 395 N.W.2d 801 (Wis. Ct. App. 1986), rev. denied, 134 Wis. 2d 457, 401 N.W.2d 10 (1987).

24. Fire fighters in many states are protected by "heart and lung" statutes which create a presumption that any cardiovascular or respiratory conditions suffered are work-related. These statutes are often used to justify off-duty smoking bans. See generally Rothstein, *Refusing to Employ Smokers: Good Public Health or Bad Public Policy*, 62 NOTRE DAME L. REV. 940, 952-53 (1987).

Most smoking bans have been promulgated at the local level. Approximately 32 localities currently discriminate against smokers when hiring fire fighters, police officers and other public safety employees. Massachusetts is currently the only state to ban smoking by newly hired recruits.

The most stringent hiring policies call for refusal to hire smokers, require signatures of agreement not to smoke, call for possible termination upon violation, and have, in some instances, been written into collective bargaining agreements. Several localities have expressed a general preference for nonsmoking employees if a choice must be made between a smoker and a nonsmoker. At least one jurisdiction requires mandatory attendance at "health seminars," which include compulsory exercise and nonsmoking educational programs.

25. 816 F.2d 539 (10th Cir. 1987).

26. *Id.* at 541.

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concerns and are likely to be challenged in the future.²⁷ Moreover, where the smoking restrictions apply only to part of the work force, such as new hires, they are likely to be challenged on equal protection grounds.²⁸ These issues have yet to be fully litigated in the courts.

B. Statutory Claims

Nonsmokers have relied upon numerous statutes attempting to limit smoking in the workplace or, alternatively, to obtain financial benefits if they believe they cannot continue working in the presence of tobacco smoke. These statutory bases include federal and state handicap laws, disability statutes and workers' compensation laws.²⁹

Despite these attempts, the courts have generally refused to restrict workplace smoking. Some courts, however, have held that employees claiming severe adverse reactions to tobacco smoke are "handicapped" or "disabled" or may be able to recover workers' compensation benefits.

In *Vickers v. Veterans Administration*,³⁰ the court found that an employee was "handicapped" within the meaning of section 504 of the Federal Rehabilitation Act of 1973³¹ when it found him to be "hypersensitive"³² to tobacco smoke and physically una-

27. See Max, *The Company Is Watching You Everywhere*, N.Y. Times, Feb 15, 1987, § 4, at 21, col. 2; Lamp, *When Can You Fire for Off-duty Conduct?*, 66 HARV BUS REV., 28-30, Jan.-Feb. 1988.

28. In *Gruenwald*, the court specifically questioned whether the smoking ban, which applied only to fire fighter trustees, could withstand an attack on equal protection grounds. The court refused, however, to consider this issue because it was not raised by the parties. 816 F.2d at 543.

29. The Occupational Safety and Health Act (OSHA), 29 U.S.C. §§ 651-678 (1982) currently provides no remedy for nonsmokers seeking a smoke-free work environment. Tobacco smoke is not listed by OSHA as a "toxic and hazardous substance." See 29 C.F.R. § 1910.1000-1910.1500 (1988). Indeed, in 1987 OSHA denied a citizen petition requesting OSHA to classify tobacco smoke as a potential occupational carcinogen and develop a standard for "tobacco smoke." BNA, DAILY REPORT FOR EXECUTIVES at A-24 (Mar. 2, 1987). In addition, OSHA administrators have consistently refused to accept complaints based solely on workplace smoking and, thus, apparently do not perceive that environmental tobacco smoke constitutes a violation of an employer's statutory duty to provide a "healthful" working environment. Moreover, OSHA provides no private right of action for employees who seek to restrict workplace smoking. See *Federal Employees for Nonsmokers Rights v. United States*, 446 F. Supp. 181 (D.D.C. 1978), *aff'd*, 598 F.2d 310, *cert. denied*, 444 U.S. 926 (1979); *Barrera v. E. I. du Pont de Nemours*, 653 F.2d 915, 920 (5th Cir. 1981).

30. 549 F. Supp. 85 (W.D. Wash. 1982).

31. 29 U.S.C. §§ 701-796 (1982). The Rehabilitation Act imposes affirmative action and nondiscrimination obligations upon a limited group of employers: federal agencies, federal contractors, and recipients of federal assistance.

32. The *Vickers* court used the terms "hypersensitivity" and "unusually sensitive" interchangeably. See 549 F. Supp. at 87. In medical terms, "hypersensitivity" is defined as "a state of altered reactivity in which the body reacts with an exaggerated response to a

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ble to perform his job in the presence of environmental tobacco smoke.³³ In *GASP v. Mecklenburg County*,³⁴ however, the court rejected similar claims, cautioning that the term "handicap" was not intended to include all persons who claim to suffer from a pulmonary problem, however minor, or those who are simply irritated by tobacco smoke.

In the workers' compensation context, a California court has held that a nurse who left her job because of "allergic" reactions to tobacco smoke was eligible for unemployment compensation until she could find alternative employment in a smoke-free environment.³⁵ A Louisiana court has denied unemployment benefits under similar circumstances because it found that the employee's preexisting allergy, which was not aggravated by her employment, did not constitute "good cause" for her resignation.³⁶

In *Parodi v. Merit Systems Protection Board*,³⁷ a federal employee who claimed to be hypersensitive to tobacco smoke was found to be "disabled." Nevertheless, the *Parodi* court found that the employee would not be entitled to disability benefits if the employer offered her a reasonable accommodation by transfer to a comparable job in a smoke-free work area.³⁸

While each case is based on its own set of facts, these cases seem to indicate that currently only those found to have the most

foreign agent." DORLAND'S ILLUSTRATED MEDICAL DICTIONARY 635 (26th ed. 1981).

This term must not be confused with "allergy" or "allergic reaction." To date, no specific antigens have been identified in tobacco smoke, and when individuals claim to be "allergic" to smoke, at best, they can be said to suffer from non-specific responses to smoke exposure. See Lehrer, *Tobacco Smoke Sensitivity: A Result of Allergy?*, ANNALS OF ALLERGY 56, May 1986, at 1-10.

33. The *Vickers* court did not award any injunctive or monetary relief, however, because it found that (1) the employer did not discriminate against plaintiff by reason of his handicap; and (2) the employer made reasonable efforts to accommodate plaintiff. 549 F. Supp. at 87-89. For a thorough analysis of the *Vickers* decision see Comment, *Limited Relief for Federal Employees Hypersensitive to Tobacco Smoke: Federal Employer's Who'd Rather Fight May Have to Switch*, 59 WASH. L. REV. 305, 312-22 (1984). See also Department of Fair Employment and Housing v. Fresno County, FEHC Dec. No. 81-82 (CE-0009 ph) (1984) (employee allergic to tobacco smoke found to be "handicapped" under California Fair Employment and Housing Act).

34. 42 N.C. App. 225, 256 S.E.2d 477 (1979).

35. *Alexander v. California Unemployment Ins. Appeals Bd.*, 104 Cal. App. 3d 97, 163 Cal. Rptr. 411 (1980). See also *McCracklin v. Employment Dev. Dep't*, 156 Cal. App. 3d 1067, 205 Cal. Rptr. 156 (1984) (employee's "good-faith fear" that smoke-filled room was harmful to his health found "reasonable" and employee entitled to unemployment benefits).

36. *Billman v. Sumrall*, 464 So. 2d 382 (La. App. 1985). But see *Lapham v. Pennsylvania Unemployment Compensation Bd. of Review*, 103 Pa. Commw. 144, 519 A.2d 1101 (1987) (bronchitis sufferer entitled to collect unemployment benefits where proffered physical relocation was deemed not a "reasonable accommodation"); *McCracklin*, 156 Cal. App. 3d 1067, 205 Cal. Rptr. 156.

37. 690 F.2d 731 (9th Cir. 1982), as amended, 702 F.2d 743 (9th Cir. 1982).

38. For a thorough analysis of *Parodi*, see Comment, *supra* note 33, at 308-22.

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severe reactions to tobacco smoke will be considered "handicapped" or "disabled."³⁹ On the other hand, an employee who is merely "irritated" or "annoyed" is not typically found to be "medically hypersensitive."⁴⁰ Private employers subject to state handicapped statutes, or federal contractors covered by section 503 of the Rehabilitation Act of 1973, may accordingly also have a duty to reasonably accommodate employees found to be hypersensitive where such an accommodation would not pose an "undue hardship" on the employer or the rest of its work force. Yet, as the court recognized in *Vickers*, "the desires of those employees who wish to smoke cannot be disregarded."⁴¹

An employer's offer to transfer the "handicapped" individual to a comparable position in a smoke-free work area would appear to be sufficient accommodation.⁴² But when a medically hypersensitive employee is unable to continue working, he or she may be entitled to disability or workers' compensation benefits. Despite this fact, employers have great latitude to accommodate the competing interests of smoking and nonsmoking employees because the foregoing cases do *not* impose any affirmative obligation upon employers to restrict workplace smoking.

C. Discrimination Claims

There is also a possibility that employers' policies or practices limiting smoking in the workplace may trigger "disparate impact" discrimination claims.⁴³ Because a greater percentage of blacks in the United States smoke than whites, outright hiring bans or other policies which unduly restrict smoking in the workplace may disproportionately affect black employees.⁴⁴ Thus, these actions could

39. See, e.g., *Vickers v. Veterans Admin.*, 549 F. Supp. 85, 87 (W.D. Wash. 1982).

40. See, e.g., *GASP v. Mecklenburg County*, 42 N.C. App. 225, 256 S.E.2d 477 (1979); *Gordon v. Raven Sys. & Research*, 462 A.2d 10, 15 (D.C. App. 1983).

41. *Vickers*, 549 F. Supp. at 89.

42. See *Parodi*, 702 F.2d at 749-51.

43. The Civil Rights Act of 1964, 42 U.S.C. § 2000e-2000e-17 (1982) prohibits employer policies which, while facially neutral, "operate to freeze the status quo of prior discriminatory employment practices." *Griggs v. Duke Power Co.*, 401 U.S. 424 (1971). In other words, Title VII prohibits otherwise neutral employment practices which disproportionately affect protected groups.

Employer smoking restrictions may also be challenged under Title VII if individuals are subjected to "disparate treatment" because of their race, sex, religion or national origin. In such cases, the plaintiffs must prove that the employer *intended* to treat them differently on account of their protected status. See *McDonnell Douglas Corp. v. Green*, 411 U.S. 792 (1973). *But see Moore v. Inmon Corp.*, 608 F. Supp. 919 (W.D.N.C. 1983) (Title VII claim rejected where black employee discharged for violating smoking policy related to safety standards that was applied equally to all employees).

44. The results of smoking prevalence studies vary depending on the year and sample size. However, the studies uniformly report a greater incidence of smoking among blacks than whites. For example, in 1980, 47.7% of black males smoked, compared with 40.2%

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be challenged under state or federal discrimination laws.⁴⁴ Once an employee shows that an employer's otherwise neutral smoking policy or practice has a statistically significant disproportionate impact on blacks, the employee has made out a *prima facie* case of discrimination under Title VII.⁴⁵ In order to defend, the employer must then successfully demonstrate that the policy or practice is justified by a "business necessity."⁴⁶ Some smoking restrictions, such as those prohibiting smoking near hazardous or flammable materials, may constitute a "business necessity."⁴⁷ Unless required by statute or ordinance, however, it is unlikely that courts would find that the preferences of co-employees or customers rise to the level of a business necessity.⁴⁸ Even so, the court could still find a Title VII violation if the employee proves that there are other alternatives which accomplish the same business purpose, yet have less impact on blacks.⁴⁹

Accordingly, employers need to examine carefully current or proposed workplace smoking restrictions to ensure that they do not discriminate against protected groups. If they do, the employer must be prepared to establish that the smoking policy adopted is justified by legitimate business purposes and is the least drastic means of accomplishing the employer's goals.

of white males. *SURGEON GENERAL'S REPORT*, *supra* note 5, at 49. See also *supra* note 5.

45. For a comprehensive discussion of smoking and civil rights issues, see Ethridge & Fox, *supra* note 5.

46. A *prima facie* case is sufficient to prove a Title VII violation, unless contradicted or overcome by other evidence. *McDonnell Douglas Corp. v. Green*, 411 U.S. 792 (1973).

47. To prove a business necessity, an employer may show that the policy or practice has a "manifest relationship" to performance of the job in question (i.e., that it is a "job-related criterion"). Alternatively, the employer may seek to prove that the policy or practice in question is necessary to the safe and efficient operation of the business. "[A] discriminatory employment practice must be shown to be necessary to safe and efficient job performance to survive a Title VII challenge." *Dothard v. Rawlinson*, 433 U.S. 321, 332 n.14 (1977).

48. See, e.g., *Moore v. Inmont Corp.*, 608 F. Supp. 919, 927 (W.D.N.C. 1985).

49. See *Rucker v. Higher Educ. Aids Bd.*, 669 F.2d 1179, 1181 (7th Cir. 1982) (employer is forbidden by Title VII to refuse to hire someone on racial grounds because his customers or clientele do not like his race); *Diaz v. Pan Am. World Airways*, 442 F.2d 385 (5th Cir.), cert. denied, 404 U.S. 940 (1971) (Pan Am violated Title VII when it banned employment of male flight attendants despite passenger preferences for female flight attendants); *Bing v. Roadway Enter.*, 444 F.2d 687 (5th Cir. 1971) (invalidating a motor freight company's rule that an employee who desired to transfer to another job must resign his present position and thereby forfeit accrued employment rights. Finding the rule to have an adverse impact on blacks, the court rejected the company's argument that the rule was "necessitated" by the prospect of employee unhappiness with the demise of the rule). *Accord Jones v. Lee Way Motor Freight*, 431 F.2d 245 (10th Cir. 1970), cert. denied, 401 U.S. 954 (1971).

50. See *Dothard v. Rawlinson*, 433 U.S. 321 (1977). If an employer meets the burden of showing that its tests or selection devices are job-related, the burden then shifts to the complaining party to show that other less discriminatory selection devices would also serve the employer's legitimate interests. See also *Albemarle Paper Co. v. Moody*, 422 U.S. 405, 425 (1975).

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D. Common Law Claims

An employer's general common law duty to provide a reasonably safe working environment for its employees has been codified by federal and state occupational safety and health (OSHA) laws.⁵¹ In an attempt to restrict workplace smoking, employees have filed several lawsuits claiming that such smoking violates this general common law duty. However, only one lower court decision, in New Jersey, *Shimp v. New Jersey Bell Telephone*,⁵² has found an employer permitting smoking in the workplace to have violated this duty. The remainder of the courts confronted with this issue have declined to find the duty violated and have refused to restrict workplace smoking. Thus, there is currently little, if any, authority for imposing a common law obligation upon employers to restrict smoking in the workplace.

In *Shimp*, a secretary who claimed to suffer from a severe "allergic" reaction to tobacco smoke sought an injunction to prevent other employees from smoking in her work area. Plaintiff submitted medical opinions in support of her request for an injunction. The employer, on the other hand, failed to put forth any evidence to refute the plaintiff's claims. Not surprisingly, the New Jersey Superior Court found that the employer had a common law duty to provide safe working conditions. Accordingly, it directed the employer to restrict smoking to the lunchroom.⁵³

A key determinant of the outcome of *Shimp* was a lack of any active defense by New Jersey Bell, which filed no answer or affidavits in opposition to the plaintiff's request for an injunction. It is quite possible that the result in *Shimp* might have been different had it not been uncontested and had New Jersey Bell, instead, presented a true "case and controversy." Significantly, an identical complaint subsequently filed by Ms. Shimp's attorney before the same judge on behalf of another New Jersey Bell employee was summarily dismissed.⁵⁴ The only difference between the two cases is that the employer elected to defend itself in the later case.

Also, seven years later in *Smith v. Blue Cross & Blue Shield*,⁵⁵

51. See 29 U.S.C. §§ 651-678 (1982) (Federal OSHA). Section 654(a) sets forth the so-called "general duty" clause, which requires that an employer "shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or likely to cause death or serious physical harm to his employees." See also *supra* note 29.

52. See also CAL LABOR CODE §§ 6300-6711 (Deering Supp 1988) (Cal-OSHA). Section 6400 provides that "[e]very employer shall furnish employment and a place of employment which are safe and healthful for the employees therein."

53. 145 N.J. Super. 516, 368 A.2d 408 (1976).

54. *Id.* at 531, 368 A.2d at 416.

55. *Mitchell v. New Jersey Bell Tel. Co.*, No. C-4159-76 (N.J. Super. Ct. Ch. Div.)

No. C-3617-81E, 16-17 (N.J. Super. Ct., Aug. 18, 1983).

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the New Jersey Superior Court rejected and dismissed a similar claim by a nonsmoking employee who also claimed to be hypersensitive to cigarette smoke. The court held that the safety of the workplace was to be judged by reference to the "typical" employee, *not* the hypersensitive employee.⁵⁶ Moreover, the court limited the holding in *Shimp*, stating:

Insofar as the *Shimp* case is read by some as requiring an employer to institute Draconian measures to smoking employees I think it has to be viewed somewhat skeptically and cautiously. I myself have no problem at all with the basic concept of *Shimp*, that a safe workplace is required, but I must say it seems to me that some of the prohibitions contained in the *Shimp* case are too sweeping and go well beyond what is necessary to ensure a safe working place.⁵⁷

The court therefore concluded that the nonsmoking "supersensitive" employee had no right to a smoke-free environment.

A District of Columbia court reached the same conclusion in *Gordon v. Raven Systems & Research, Inc.*⁵⁸ In *Gordon*, the employer terminated an employee after she refused to work in an area containing some tobacco smoke. The employee subsequently filed a lawsuit contending that the employer was negligent in not providing her with a smoke-free workplace. The court dismissed the employee's claim, because the plaintiff had presented no evidence to support her allegations that tobacco smoke was harmful to employees. Significantly, too, the District of Columbia court held that the employer had no duty to conform the workplace to the particular needs or sensitivities of an individual employee.⁵⁹

Likewise, the trial court in *Smith v. AT&T Technologies*⁶⁰ also rejected an employee's claim that the employer breached its common law duty to maintain a safe working environment. This conclusion was based on the court's finding that "the tobacco smoke in plaintiff's former work area was [not] hazardous to the health of plaintiff or the health of the other employees in that area."⁶¹

56. *Id.* at 15. ("It simply is not right in terms of the way in which human beings have to relate to one another, that because someone is as sensitive as that all the rest of the world has to go through a tightly-controlled regimen of smoking discipline"). *Id.* at 13. ("[Smokers] are after all human beings with needs and feelings like everyone else, and there simply is no matter of civilized management of a work force to treat smokers as though they were moral lepers and to banish them to a remote isolated area of the workplace").

57. *Id.* at 8.

58. 462 A.2d 10 (D.C. App. 1983).

59. *Id.* at 15.

60. No. 4446121 (St. Louis City Cir. Ct., Apr. 23, 1985). This case was on remand from an earlier decision, *Smith v. Western Elec. Co.*, 643 S.W.2d 10 (Mo. App. 1982), which recognized that employers have a common law duty to provide a safe workplace.

61. *Smith*, No. 4446121, at 3 (St. Louis City Cir. Ct., Apr. 23, 1985).

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The court added that the employer was not required to provide a "comfortable" workplace.⁶²

While there is thus far only a single ruling to support the allegation that environmental tobacco smoke causes harm to nonsmokers, employers nevertheless must be careful not to retaliate against employees who protest corporate policies permitting smoking. In *Henizel v. Singer Co.*,⁶³ a California court held that an employee could state a common law retaliatory dismissal claim after being terminated for protesting hazardous working conditions. The court did so without addressing whether the alleged hazard (environmental tobacco smoke) was, in fact, hazardous.

Overall, the courts have been reluctant to find any common law basis for restricting workplace smoking in the absence of sufficient proof that environmental tobacco smoke causes significant medical harm to nonsmokers.⁶⁴ With the exception of the now dated and criticized 1976 *Shimp* decision, the courts have declined to expand an employer's common law duty to provide a safe working environment to encompass a smoke-free working environment.⁶⁵

62. *Id.* at 4.

63. 138 Cal. App. 3d 290, 188 Cal. Rptr. 159 (1982).

64. In fact, no link has been shown between ETS and chronic adverse health effects. Both the Surgeon General and the National Academy of Sciences found that available studies preclude any firm conclusion about the relationship between exposure to ETS and cardiovascular disease and that further studies are needed to determine whether any real link exists. See, e.g., SURGEON GENERAL'S REPORT, *supra* note 12, at 14; NAS REPORT, *supra* note 12, at 11. In addition, the Surgeon General's report concluded that "a previously healthy individual would not develop chronic lung disease solely on the basis of involuntary tobacco smoke exposure in adult life." SURGEON GENERAL'S REPORT, *supra* note 12, at 62. Finally, both the Surgeon General and the National Academy of Sciences reports emphasize critical limitations on their finding of a possible connection between exposure to ETS and lung cancer. Upon reviewing the same evidence considered by the NAS and the Surgeon General, the International Agency for Research on Cancer of the World Health Organization concluded, also in late 1986, that the available evidence is equally consistent with the finding of an increase in risk or an absence of risk. IARC MONOGRAPH, *supra* note 12, at 308. A number of other studies published since 1986 also contradict the limited findings of the Surgeon General and NAS reports with respect to the purported relationship between ETS and lung cancer. See, e.g., PROCEEDINGS, *supra* note 12, at 242-50, 252-58.

65. In 1986, a Massachusetts court rejected a nonsmoker's claim against her employer based on breach of contract, and intentional and negligent infliction of emotional distress. *Bernard v. Cameron & Colby Co.*, 397 Mass. 320, 491 N.E.2d 604 (1986). But, in *McCarthy v. Washington*, 110 Wash. 2d 812, 759 P.2d 351 (1988), the Washington Supreme Court recently held that an employee who allegedly developed lung disease as a result of exposure to tobacco smoke in the workplace was not preempted by workers' compensation laws from stating a cause of action against her former employer for negligence—a finding inconsistent with existing labor law precedents. While four justices opined in dicta that employers have a common law duty to provide a smoke-free work environment, that conclusion was specifically rejected by a majority of the court. See *id.* at 826, 759 P.2d at 358 (Brachtenbach, J., dissenting). In a statement issued by the Washington State Attorney General's office, a spokesperson for the attorney general said that the dicta of the three justices in *McCarthy* did not establish binding law on the issue of an employer's duty to provide a "reasonably safe" workplace. 26 GOVERNMENTAL EMPLOYMENT

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Indeed, several courts that have addressed the issue to date have recognized the need to consider the interests of both smokers and nonsmokers.⁶⁶

III. WORKPLACE SMOKING LEGISLATION

In addition to analyzing case law, the workplace smoking issue demands a careful review of relevant state and local legislation.⁶⁷ Thirteen states to date have enacted legislation specifically regulating smoking in private workplaces.⁶⁸ These are: (1) Connecticut;⁶⁹ (2) Florida;⁷⁰ (3) Iowa;⁷¹ (4) Maine;⁷² (5) Minnesota;⁷³ (6) Montana;⁷⁴ (7) Nebraska;⁷⁵ (8) New Hampshire;⁷⁶ (9) New Jersey;⁷⁷ (10) Rhode Island;⁷⁸ (11) Utah;⁷⁹ (12) Vermont;⁸⁰ and (13) Washington.⁸¹

These state laws vary greatly, especially in the degree to which they attempt to displace the role of the employer and its employees in resolving workplace smoking issues. However, virtually all of the state laws have the following common features:

(1) None of the state laws entirely bans smoking in the workplace;⁸²

RELATIONS REPORT 1172 (Aug. 1988). A trial on the merits in *McCarthy* is scheduled for October 1989.

66. See *Shimp v. New Jersey Bell Tel.*, 145 N.J. Super. 516, 531, 386 A.2d 408, 416 (1976); *Gordon v. Raven Sys. & Research*, 462 A.2d 10, 15 (D.C. App. 1983); *McCarthy*, 110 Wash. 2d at 821-22, 759 P.2d at 355-56.

67. There is no federal legislation regulating smoking in private workplaces. The United States government has, however, adopted smoking restrictions covering the 6,800 buildings controlled by the General Services Administration. These restrictions apply to approximately 890,000 federal employees. See 41 C.F.R. Part 101-20.105-3. In addition, the Federal Labor Relations Authority has recently restricted the ability of several federal agencies to change smoking policy without first negotiating with bargaining units. *Treasury Employees Union Chapter 250*, 33 FLRA No. 8, 61-74 (Before Calbourn and McKee) (Oct. 13, 1988), Nos. 0-NG-1524, 0-NG-1536 and 0-NG-1545.

68. This figure represents only those states with laws specifically aimed at private sector workplaces. It does not include the various laws regulating smoking by public sector employees in government-owned buildings or those public safety or occupational regulations pertaining to smoking.

69. CONN GEN STAT ANN § 31—40q (West 1987 & Supp. 1988).

70. FLA. STAT. ANN § 386.202—386.209 (West 1986).

71. IOWA CODE ANN § 98A.1—98A.6 (West Supp. 1988).

72. ME REV STAT. ANN tit. 22, § 1580-A (Supp. 1988).

73. MINN. STAT. ANN §§ 144.411—144.417 (West Supp. 1989).

74. MONT. CODE ANN §§ 50-40-101—50-40-109 (1987).

75. _____.

76. N H REV STAT. ANN §§ 155:50—155:53 (Supp. 1988).

77. NJ STAT. ANN ch. 184, §§ 26:3D-23—26:3D-31 (West 1987).

78. R.I. GEN LAWS §§ 23-20.7-1—23-20.7-7 (Supp. 1988).

79. UTAH CODE ANN §§ 76-10-101, 76-10-106, 76-10-108—76-10-110 (Supp. 1988).

80. VT STAT ANN, tit. 18, §§ 1421—1428 (Supp. 1988).

81. WASH. REV. CODE ANN § 70.160.010—70.160.900 (West Supp. 1988).

82. In a recent election in Oregon, Proposition 6—which would have imposed a vir-

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- (2) Most state laws do not prohibit smoking in specific areas;
- (3) Most provide exceptions for enclosed private offices; and
- (4) Most provide for only minor penalties, such as minimal fines, for violations.

Local city, county, or other municipal ordinances may also restrict smoking in private workplaces.⁸³ Local ordinances are often more restrictive and specific than state statutes.⁸⁴ Local ordinances may specifically limit smoking in particular areas of the workplace. Some of these local laws, such as the San Francisco, California ordinance, also accord preferential rights to nonsmoking employees within their work area.

Workplace smoking laws can be generally categorized into three groups, according to the degree to which they intrude upon an employer's discretion. These categories are: (1) the "least intrusive" laws, (2) the "partially intrusive" laws, and (3) the "most intrusive" laws.

The least intrusive laws are relatively straightforward. They merely require the employer to establish, post and implement a written policy regarding smoking in the workplace. These laws leave the specifics to the individual employers and do not dictate the content of the policy. For example, New Hampshire's workplace smoking law merely states:

An employer shall, within 6 months of the effective date of this subdivision, establish and implement written rules governing smoking and nonsmoking in the workplace. The rules shall be readily available for viewing by the employees and may include the designation of smoking and nonsmoking areas. Upon request, the employer shall provide a copy of the written rules to any employee.⁸⁵

Least intrusive laws can also be found in Connecticut, Maine and Montana.

The partially intrusive laws are somewhat more specific. They typically spell out the particulars that employers must include in smoking policies, and indicate the types of efforts required of an employer to accommodate nonsmoking employees. Often they indicate a presumption that smoking should be prohibited in all areas except where it is specifically permitted.

Many partially intrusive laws require the employer to allocate smoking and nonsmoking areas based on the numbers of smokers

tual ban on smoking in all public places, including places of work—was defeated by a three to two margin.

83. Hundreds of local ordinances impact smoking in the workplace. The majority of these are located in California. BNA, *SPECIAL REPORT*, *supra* note 1, at 66.

84. In Florida and Oklahoma, state law preempts all local smoking ordinances.

85. N.H. REV. STAT. ANN. § 155:52(I) (Supp. 1988).

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and nonsmokers. In addition, some state laws require employers to place physical barriers or "buffer zones" between smoking and nonsmoking employees. States with partially intrusive laws include Florida, Minnesota, Nebraska and Utah.

The most intrusive laws impose significantly greater burdens on employers and limit management's discretion. These laws generally dictate which portions of the workplace must be designated as no-smoking areas. Also, these laws usually specify the percentage of space in employee cafeterias, lunchrooms and lounges that must be reserved for nonsmokers. In some instances, these most intrusive laws give nonsmoking employees superior rights over smokers. For example, the local ordinance in Palo Alto, California, provides that "[i]n any dispute arising under the policy, the rights of the nonsmoker shall be given precedence."⁸⁶

A. Objections to Legislation Concerning Workplace Smoking

The primary and most obvious objection to legislative enforcement of workplace smoking is that it usurps the ability of employers to deal individually with employee concerns as they arise. Legislation does not add to management's bevy of rights; rather, such legislation takes away the considerable flexibility employers have historically enjoyed in this area. In addition, there are numerous other potential objections to legislation covering workplace smoking.

First, smoking laws, like workplace smoking policies, can be difficult to enforce. Regardless of whether this responsibility is placed on the employer or some governmental body, such as a law enforcement agency or local health department, limited resources and personnel makes rigorous enforcement of workplace smoking laws unlikely. Second, because workplace smoking is generally considered to be a *mandatory* subject of bargaining,⁸⁷ legislative restrictions may create conflicts between employers and unions. Third, restrictions imposed by smoking legislation may interfere with worker efficiency. For example, where compliance with the law requires employers to rearrange work areas or segregate smoking and nonsmoking employees, an employer's operations may be disrupted and productivity decreased.⁸⁸ Fourth, smoking

86. Palo Alto Municipal Code, ch. 9.14, effective Feb. 1, 1984.

87. See *infra* note 95.

88. According to one study, of those employers polled which have implemented smoking restrictions, seven percent responded that their policies have had a notable effect on company costs. Eight percent indicated that employee productivity increased, while three percent reported that their restrictions had a detrimental effect on employee productivity. BNA, SPECIAL REPORT, *supra* note 1, at 22-23. For an economist's view of the "social costs" of smoking, including lost production, workplace efficiency and absenteeism,

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laws which give nonsmokers unlimited power to dictate the company policy for all workers are likely to be perceived as unfair by others, especially employees who smoke. For instance, a local ordinance in San Francisco allows even one employee to veto an employer's smoking policy in that employee's "office workplace."⁸⁸ These types of policies will undoubtedly create resentment among some employees and foster the perception that employers unfairly favor nonsmokers.⁸⁹ Fifth, where legislation requires employers to physically separate smokers and nonsmokers, employers may experience a loss of managerial freedom. Finally, some state or local laws regulating smoking in the workplace are likely to be challenged on constitutional or other grounds, and may thus embroil employers in resulting litigation.⁹⁰

As a result of these problems, smoking in the workplace is often best left to the discretion of management and its employees. Excessive regulation in this area substantially undermines an employer's ability to respond flexibly to smoking-related problems, while at the same time it creates a morass of practical and legal problems. Moreover, smoking ordinances are not a panacea. They cannot take into account the peculiarities of each workplace, nor can they address the unique problems and personalities involved in any given situation. Employers must still resolve the competing interests of smoking and nonsmoking employees.

see R. TOLLISON & R. WAGNER, SMOKING AND THE STATE ch. 3 (1988)

89. San Francisco Municipal Health Code, Smoking Pollution Control Ordinance No. 298-83 (Proposition P), effective Mar. 1, 1984.

90. Thus far, employee sentiments about smoking policies have been mixed. Overall, 42% of recent survey respondents said the smokers think their policy is "about right," while 33% indicated the rules were too restrictive; 53% of firms with policies said that nonsmokers were satisfied, while 33% said nonsmokers wanted tougher restrictions. BNA, SPECIAL REPORT, *supra* note 1, at 23.

Press accounts of employee sentiment are decidedly mixed as well. See *Do You Smoke? Drink? If So, Some Employers Say, You May as Well Stay Home*, BUSINESS FIRST-COLUMBUS, vol. 3, no. 36, § 2, at 3; *The Company Is Watching You Everywhere*, N.Y. Times, Feb. 15, 1987, § 4, at 21, col. 2. (Editorial Desk); *Some Workers Upset by Company Smoking Ban*, AP, Jan. 21, 1987; *Bans, Red Ink: Smoking: A Burning Issue*, L.A. Times, Nov. 21, 1985, § 1, at 1, col. 1. (Metro Desk); *Where There's Smoke, There's Ire: After Years on the Defensive, Smokers Fight Back*, L.A. Times, Jan. 14, 1988, § 4, at 1, col. 1.

91. The primary challenge is that smoking laws are often too vague to set definite standards of compliance for employers. Indeed, several smoking ordinances have already been struck down as unconstitutionally vague. See, e.g., *Florida v. Burton*, No. 80-999CO-A-42 (Fla. Cir. Ct. 1981) (ordinance restricting smoking in public places unconstitutionally vague); *Greater Rockford Food Servs. v. Orthoefer*, No. 76-2447 (Ill. Cir. Ct. 1976) (ordinance restricting smoking in public place struck down as unduly vague and in violation of constitutional guarantees of equal protection).

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IV. LABOR RELATIONS ISSUE

Unionized employers seeking to adopt workplace smoking policies, including policies necessitated by statute or ordinance, must consider whether such policies can be adopted unilaterally without bargaining with the union and whether the policy violates the collective bargaining agreement.⁹²

The National Labor Relations Act⁹³ (NLRA) prohibits an employer from unilaterally changing the terms and conditions of employment without bargaining with the union representing the employees. Failure to do so constitutes an unfair labor practice under section 8(a)(5) of the NLRA.⁹⁴

Rules governing workplace smoking have been held to be "terms and conditions of employment" and, accordingly, are subject to mandatory collective bargaining.⁹⁵ Thus, unless the collective bargaining agreement includes a broad "management rights" clause⁹⁶ permitting the employer to unilaterally establish plant rules, the employer must first bargain with the union prior to restricting smoking in the workplace.⁹⁷ This is especially true in sit-

92. In 1986, the AFL-CIO issued a National Resolution opposing unilateral attempts by management to impose workplace smoking policies. It provides, in part:
Unions are faced with legislation or unilaterally imposed employer policies that forbid smoking on the job and infringe on the rights of workers who smoke. Unions have a legal responsibility to represent the interests of all their members—smokers and nonsmokers. The AFL-CIO believes that issues related to smoking on the job can best be worked out voluntarily in individual workplaces between labor and management in a manner that protects the interests and rights of all workers and not by legislative mandate.

See BNA, SPECIAL REPORT, *supra* note 1, app. D at 2. There have also been scattered reports that rules regarding smoking in the workplace have become issues in union organizing drives.

93. 29 U.S.C. §§ 151-169 (1982).

94. 29 U.S.C. § 158(a)(5) (1982). The National Labor Relations Board has broad powers to prevent and/or remedy unfair labor practices. See generally 29 U.S.C. § 160 (1982).

95. See *Chemtronics, Inc.*, 236 NLRB No. 21 (1978). See also *Pennsylvania v. Pennsylvania Labor Relations Bd.*, 74 Pa. Commw. 1, 459 A.2d 452 (1983) ("[t]he subject of whether employees may smoke at their workplaces appears to be at the center of those subjects properly described as 'conditions of employment'"). See also *Gallenkamp Stores v. NLRB*, 402 F.2d 525 (9th Cir. 1968); *S. S. Kresge v. NLRB*, 416 F.2d 1225 (6th Cir. 1969); *Wintergarden Citrus Prod. v. NLRB*, 238 F.2d 128, 129 (5th Cir. 1956); *NLRB v. Hilton Mobile Homes*, 387 F.2d 7, 10-11 (8th Cir. 1967).

96. An employer may insist upon a broad "management rights" clause. See *NLRB v. American Nat'l Ins. Co.*, 343 U.S. 395 (1952). In general, such clauses give employers considerably more discretion over specific aspects of employment, which may include promotions, transfers, plant rules, etc. It is significant that the NLRB General Counsel has recently issued guidelines stating that employers must bargain with their unions before instituting any drug-testing policy. See NLRB Memorandum GC 87-5 (Sept. 8, 1987). The NLRB may adopt a similar position regarding smoking policies.

97. To date, no court has found a management rights clause sufficiently broad to permit the unilateral imposition of a smoking policy. In *Pennsylvania v. Pennsylvania Labor Relations Bd.*, 74 Pa. Commw. 1, 459 A.2d 452 (1983) the court rejected an em-

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uations where smoking is a recognized right or privilege of employment.

This issue was discussed in *In re Parker Pen U.S.A.*⁹⁸ In this case, the employer—who had permitted on-the-job smoking for over twenty years—unilaterally abolished employee smoking rights that were guaranteed under the collective bargaining agreement. The employer allegedly did so for health reasons after receiving the Surgeon General's 1986 report on involuntary smoking.⁹⁹ In resolving an employee grievance, the arbitrator held that “both parties have an interest in addressing the profound issue raised by the employer concerning the safety of the workplace.”¹⁰⁰ Accordingly, the arbitrator invalidated the employer's smoking ban until any changes could be bargained over during upcoming negotiations.

Even where the employer is required to impose smoking restrictions pursuant to state statute or local ordinance, it should bargain over all discretionary aspects of the rule.¹⁰¹ In practice, bargaining will be routinely required because most workplace smoking laws leave a considerable amount of discretion to employers.¹⁰²

Even if the unilateral implementation of a smoking policy does not violate the NLRA, it may nonetheless violate the collective

ployer's argument that it had the “inherent managerial” authority to determine unilaterally whether to permit smoking at employee work stations. In the arbitration setting compare Ohio Dept. of Health, 89 Lab. Arb. (BNA) 937 (1987) (Cohen, Arb.); Morelite Equip. Co., 88 Lab. Arb. (BNA) 777 (1987) (Stoltenberg, Arb.); Snap-On Tools Corp., 87 Lab. Arb. (BNA) 785 (1986) (Berman, Arb.); National Pen & Pencil Co., 87 Lab. Arb. (BNA) 1081 (1986) (Nicholas, Arb.); Litton Indus., 75 Lab. Arb. (BNA) 308 (1980) (Grabb, Arb.); and Sherwood Medical Indus., 72 Lab. Arb. (BNA) 258 (1977) (Yarowsky, Arb.) (smoking restrictions upheld) with Dental Command, Dept. of the Army, 83 Lab. Arb. (BNA) (Allen, Arb.) 529 (1984); Union Sanitary Dist., 79 Lab. Arb. (BNA) 193 (1982) (Koven, Arb.); and Schien Body & Equip. Co., 69 Lab. Arb. (BNA) 930 (1977) (Roberts, Arb.) (smoking restrictions invalid).

98. 90 Lab. Arb. (BNA) 489 (1987) (Fleischli, Arb.).

99. See SURGEON GENERAL'S REPORT, *supra* note 12.

100. 90 Lab. Arb. at 496.

101. There are no “smoking policy” cases directly on this point. The institution of a smoking policy would constitute a “term and condition” of employment and, therefore, be a mandatory subject of bargaining. See *supra* note 95 and cases cited therein. Nevertheless, neither union nor management may require the other to agree to provisions that are unlawful or prohibited. *Meat Cutters Local 421*, 81 N.L.R.B. 1052 (1949); *Borg-Warner v. NLRB*, 356 U.S. 342 (1958). Thus, proposed or existing provisions that directly conflict with legislation automatically become illegal or unenforceable. *Hughes Tool Co.*, 147 N.L.R.B. 1573 (1964); *Savannah Printing Specialties & Paper Prod. Local 604 v. Union Camp Co.*, 50 F. Supp. 632 (S.D. Ga. 1972). Legislation that provides employers with discretion, however, such as that which simply requires employers to “adopt” a smoking policy, would not be affected. That is, the particular discretionary aspects of the policy would still be a mandatory subject of bargaining.

102. For example, the New Hampshire law cited at *supra* text accompanying note 85, merely directs the employer to adopt a smoking policy. All of the specifics are left to the discretion of each individual employer.

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bargaining agreement. Arbitral decisions have consistently stated that to be valid, an employer rule must be reasonable under the circumstances and nondiscriminatory in application.¹⁰³ Arbitrators have struck down employer smoking policies that fail to meet this standard.

In *Union Sanitary District*,¹⁰⁴ the arbitrator found that the employer could not unilaterally prohibit employees from smoking in their offices. Specifically, the arbitrator found that the absolute prohibition was arbitrary because there was no adequate basis for the rule. Although the employer stated it wanted to protect non-smoking employees, the evidence showed there were only two bargaining unit members in the building who smoked; for six hours a day they were not in their offices but were out in the field; and no one complained about the smoking. Moreover, the California Indoor Clean Air Act of 1976,¹⁰⁵ which the employer cited to justify its ban, did not require a ban on smoking. Rather, that Act contemplates a relatively flexible regulation of smoking which recognizes the rights of both smokers and nonsmokers.¹⁰⁶

V HOW SHOULD EMPLOYERS RESPOND TO THE WORKPLACE SMOKING ISSUE?

Each employer's reaction to the workplace smoking issue will, naturally, depend on the needs and circumstances of its workplace. It is important in any situation to encourage a spirit of co-operation and communication among employees and management. Indeed, a recent survey of 1,100 employers indicated that over seventy percent expect employees to address workplace smoking issues among themselves before invoking management's time and

103. See *United Tele. Co. of Florida*, 78 Lab. Arb. (BNA) 865 (1982) (designation of no-smoking table in cafeteria upheld as reasonable in light of company and union's interests in maintaining a healthy work environment and minimizing expenses and potential liability); *H-N Advertising & Display Co.*, 88 Lab. Arb. (BNA) 329 (1986), 88 Lab. Arb. (BNA) 1311 (1987) (rule banning smoking in area of plant where combustibles are stored was reasonable and nondiscriminatory where worker safety was primary reason for expanding rule and implementation of measures to improve safety is normally management prerogative). See also *supra* note 97.

104. 79 Lab. Arb. (BNA) 193 (1982) (Koven, Arb.).

105. CAL. HEALTH & SAFETY CODE § 25940-25947 (Deering 1988).

106. See also *Schien Body & Equip. Corp.*, 69 Lab. Arb. (BNA) 930 (1977) (Roberts, Arb.) (employer plant-wide smoking ban unreasonable because there was no proof that the rule clearly benefitted nonsmokers since work area was well ventilated, nor was there any indication that the ban directly improved workers' health). See *c.f.* *Ohio Dept. of Health*, 89 Lab. Arb. (BNA) 937 (1987) (Cohen, Arb.) (state's modified smoking policy for health department employees found reasonably related to legitimate objectives); *Morristown Equip. Co.*, 88 Lab. Arb. (BNA) 777 (1987) (Stoltenberg, Arb.) (smoking ban at workstations reasonable in view of fire dangers); *Litton Indus.*, 75 Lab. Arb. (BNA) 308 (1980) (Grabb, Arb.) (rule limiting smoking to specific areas reasonable).

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efforts.¹⁰⁷ Employers should also consider the following specific issues:

(1) Is there an open line of communication so that employees can effectively express their concerns and thereby informally resolve smoking-related disputes?

(2) Have employees complained about co-workers' smoking or tobacco smoke in the work environment?

(3) If employees have complained, how many have done so, and on what basis? Are such complaints properly attributable to employee rivalries or individual medical hypersensitivity(ies)?

(4) Is poor ventilation the cause of actual or perceived indoor air quality problems?¹⁰⁸

(5) Would the imposition of smoking restrictions in the workplace decrease productivity, adversely affect employee morale, violate the provisions of a collective-bargaining agreement or give rise to discrimination claims?

(6) Could smoking disputes be resolved by management through less drastic means, such as separating smokers from non-smokers, erecting partitions or improving the company's ventilation system?

After evaluating the work environment based on the foregoing considerations, and addressing the likely accommodation options, an employer should decide whether it is necessary to implement a formal smoking policy.¹⁰⁹

107. HUMAN RESOURCES POLICY CORP., SMOKING POLICIES IN LARGE CORPORATIONS (May 1988) [hereinafter SMOKING POLICIES]. See also BNA, SPECIAL REPORT, *supra* note 1, at 26 figure E (72% of surveyed employers urged employees to resolve smoking-related problems themselves).

Other employer responses to complaints of workplace smoking included: (1) attempt to get smoker to reduce smoking (22.5%); (2) do nothing (9.7%); (3) move complainer to new work area (6.3%); (4) move smoker to new work area (3.4%); (5) other measures (3.1%); and (6) order smoker to discontinue smoking (0.9%). SMOKING POLICIES, *supra*, at 12, Table 13. See also BNA, SPECIAL REPORT, *supra* note 1, at 26.

108. There is substantial evidence that air quality complaints are indicative of a much larger problem, i.e., inadequate ventilation. For example, a January 1987 report prepared by the National Institute for Occupational Safety and Health (NIOSH) attributed 52% of complaints connected to indoor air quality to "inadequate ventilation." Only 17% of the complaints were attributable to indoor contaminants, including tobacco smoke (which accounted for only 2%). In addition, chemicals emitted from carpeting, furniture and copying machines also contribute to indoor air contamination. BNA, SPECIAL REPORT, *supra* note 1, at 9-10. Similarly, according to a report entitled *Source Nature and Symptomatology of Indoor Air Pollutants* prepared by ACVA, Atlanta, Inc., a Fairfax, Virginia company specializing in the study and assessment of indoor air pollution, environmental tobacco smoke was found to be the immediate cause of indoor air problems in only four percent of the 233 major buildings investigated between 1981 and 1987. ACVA, ATLANTA, INC., SOURCE, NATURE AND SYMPTOMATOLOGY OF INDOOR AIR POLLUTANTS 9-11 (1987).

109. A majority (63.8%) of the 1,100 corporations who responded to the SMOKING POLICIES survey had not adopted any formal smoking policy. The survey also found that the companies most likely to have smoking policies are geographically located in areas with

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VI. DRAFTING A SMOKING POLICY

In jurisdictions where workplace smoking is governed by a state statute or local ordinance, employers must conform their policies and practices to the law. In some circumstances, this may require employers to adopt a formal smoking policy. In the vast majority of jurisdictions, however, employers are still free to decide whether a smoking policy is necessary or appropriate. In doing so, employers may want to evaluate whether there is a predicate for action. In this regard, they may find it useful to survey their employees to see if there is a consensus of opinion. Management may also want to consult its labor unions, if any.

Should a company decide that a formal written policy is necessary, the specifics of the policy will naturally depend upon the individual aspects of the workplace. Because of local differences, particularly in those companies with decentralized decision making, some companies have developed a smoking policy applicable to only some divisions, offices or plants. Other employers have adopted a smoking policy in response to a specific problem or where they are governed by a particular local ordinance. In addition, companies tend to vary their smoking policies depending upon the degree of specificity desired. A less specific smoking policy aimed at promoting cooperation and consideration might, for example, state:

It is our policy to make every reasonable effort to accommodate all employees within the constraints imposed by our physical structure and financial resources. It is our firm conviction that the wishes of smokers and nonsmokers can best be resolved through cooperation, dialogue and common courtesy. Should a dispute or concern arise, management and employees should work together to seek a reasonable resolution consistent with this policy.

A nonspecific policy such as this will increase flexibility and allow management to resolve individual disputes on a case-by-case basis.

In contrast, some employers may opt for a smoking policy with a greater degree of specificity. For instance, the employer may want to designate particular smoking or nonsmoking areas or workstations. The specific locations covered may include: private offices, hallways, conference rooms, lunch rooms, restrooms and auditoriums.¹¹⁰

¹¹⁰ Workplace smoking laws. *SMOKING POLICIES*, *supra* note 107, at 4. More recently, a smaller BNA survey of 623 employers indicated that a minority (43%) of employers have not adopted any workplace smoking policy. *BNA, SPECIAL REPORT*, *supra* note 1, at 2.

¹¹⁰. If enforced in an arbitrary or discriminatory manner, a smoking policy may subject an employer to potential liability. Indeed, inequitable enforcement could foster employee discontent and possibly support claims premised on breach of contract or tort claims

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Smoking bans, while rare, pose more serious problems.¹¹¹ This is especially true if they proscribe off-duty behavior. In addition to employee morale problems, these bans are likely to give rise to a morass of legal claims.¹¹² For these reasons, employers should be extremely cautious before considering a total ban on workplace smoking.

CONCLUSION

Smoking can be the subject of emotional debate in the workplace. There are few uniform answers to guide management in dealing with the issue. But, left with enough flexibility to address the concerns of all of their employees, most employers generally find that they can resolve smoking disputes by undertaking practical accommodations on a case-by-case basis.

Some specific options for resolving smoking disputes include: (1) separating smokers from nonsmokers; (2) moving nonsmokers closer to windows or fresh air ducts; and (3) improving ventilation throughout the workplace. However difficult and legally complex the smoking in the workplace issue has become, one thing is clear: Employers have an obligation to accommodate the competing interests of smoking and nonsmoking employees. It is equally clear that in an era of increasing labor shortages, employers are redoubling their efforts to select and retain skilled and experienced workers—smokers as well as nonsmokers.

against employers or individual supervisors. See *Carroll v. Tennessee Valley Auth.*, 697 F Supp. 508 (D.D.C. 1988) (public employer not shielded from potential tort liability under "official immunity" doctrine, because supervisor who failed to enforce smoking policy acted outside course and scope of his employment). In *Carroll*, the plaintiff claimed that she had developed lung disease allegedly from exposure to environmental tobacco smoke on the job. In addition, she alleged that her supervisors took reprisals against her by giving her poor performance evaluations, assigning her demeaning work and questioning the seriousness of her health claims. On November 1, 1988, this case was settled for an undisclosed sum of money.

111. The vast majority of employers with smoking policies do not ban smoking entirely. As noted above, those which do typically do so due to product (food) contamination concerns or because flammable materials are produced or stored in the workplace. And few (five percent) give hiring preference to nonsmoking job applicants. BNA, SPECIAL REPORT, *supra* note 1, at 17, 22. One notable exception pertains to police and fire departments, which are faced with unique workers' compensation issues. See *supra* notes 24-28 and accompanying text. See also *Bans, Red Ink: Smoking: A Burning Work Issue*, *supra* note 90 (Pacific Northwest Bell bans smoking in all facilities; Radar Electric of Seattle will not hire smokers; Capital City Products conducts seminars to help employees quit smoking).

112. For a thorough discussion of smoking bans, see Rothstein, *supra* note 24, at 940.

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